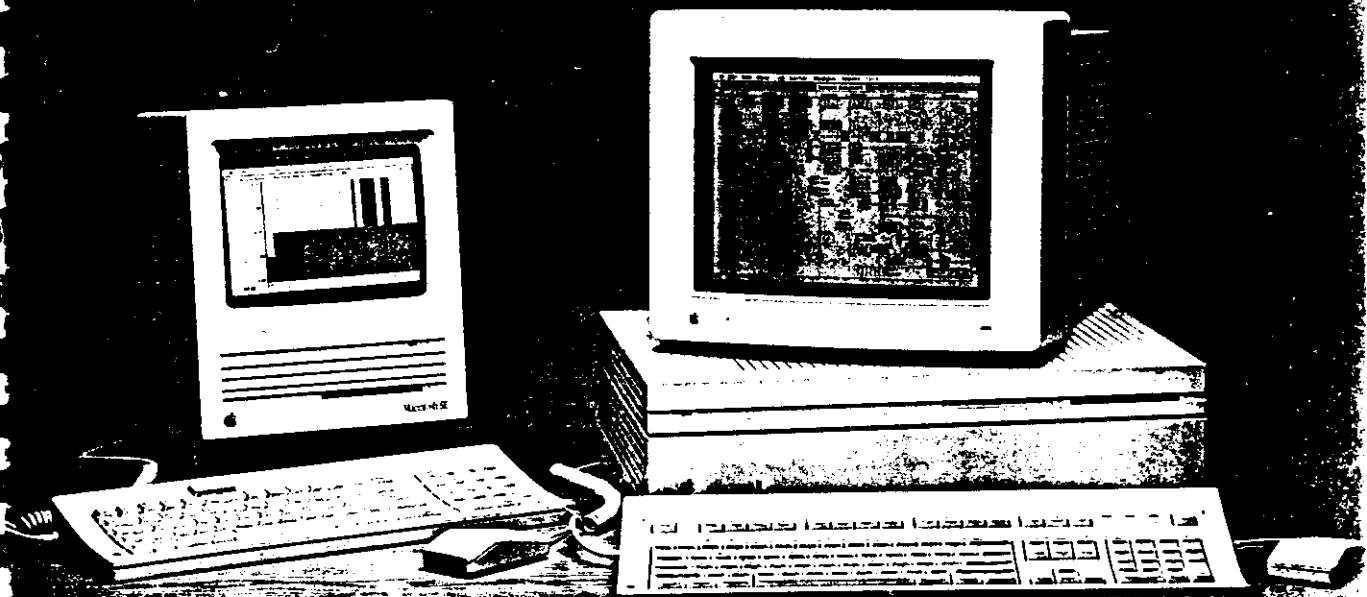
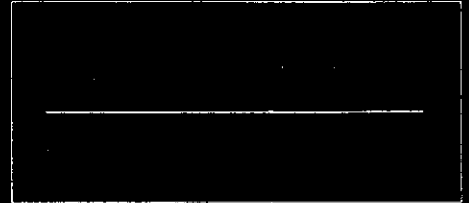




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Project Management Program for the Apple Macintosh Microcomputer

VERSION 6



Written for Macintosh by:

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Glynn H. Nixon

This manual was written by:
Glynn H. Nixon and Karen Stock

...we thank you for choosing Micro Planner

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About This Manual

This manual is about Micro Planner which is a project management package to be used for planning and controlling complex projects. Micro Planner is designed for ease of use and the most effective way to master its various routines is to use the program.

Having said that, we do not live in a perfect world and there will be times when you and Micro Planner will not understand each other - in those circumstances you will want to fall back on the manual for reference purposes.

Accompanying this manual, you will find a small *Introduction booklet* which is designed as a quick tutorial to take you through your first faltering steps. There is also a *Quick Reference Guide* which is designed for those everyday questions you need to check in a hurry.

Chapters 1 and 2 are guides to creating your project model followed by Chapter 3 which deals with Resources.

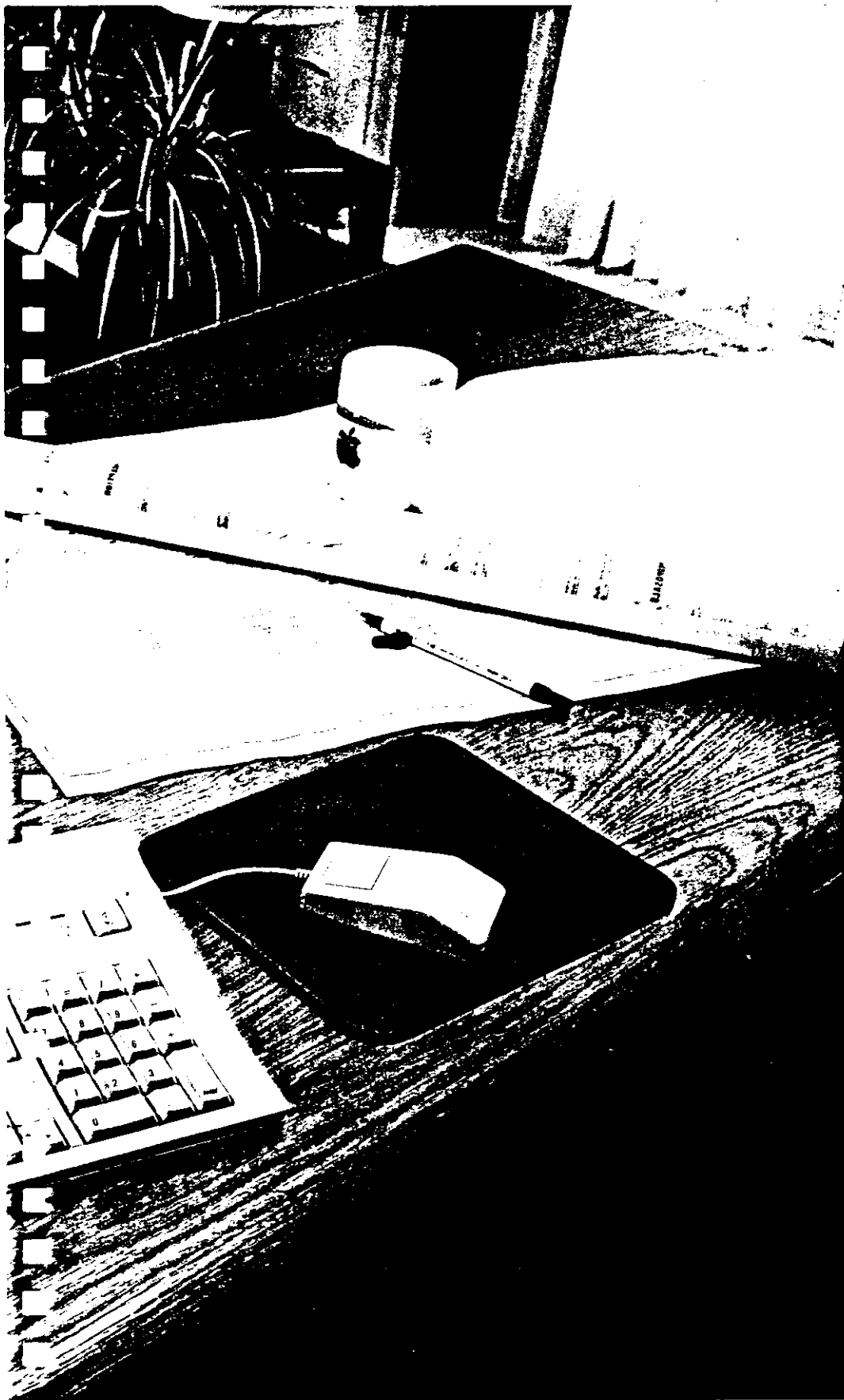
Chapter 4 looks at the important aspect of analyses and Chapter 5 outlines the steps required to print your reports.

Chapter 6 discusses the philosophy of managing projects with Micro Planner followed by Chapter 7 which looks at the important question of updating or modifying your project.

Before using Micro Planner, you should learn to use your *Macintosh* with the help of the owners guide - it will save time in the long run.

Finally, this version of Micro Planner is distributed throughout the world and as a result we have had to make one or two compromises regarding the terms used and the way things are spelt. So, if you are an American noticing the quaint English, spare a thought for those across the Atlantic who may be wondering why we spell colour the wrong way!





1

Creating
the
Project

1

Creating the Project

A New Project

When faced with the problems of creating a project schedule, different people have differing techniques for setting about the task. The project is essentially a collection of activities to be completed in logical order - these activities take time to accomplish and use resources.

You may start by listing the activities in the project or you may prefer to draw a logic network on paper. A third option is to immediately start building the model on your *Macintosh*. Whichever technique you adopt, let's assume that you are ready to build your network.

This chapter introduces the first principles of Micro Planner and explains how to construct a network model from square one. If you are using Micro Planner for the first time - why not try your hand at the tutorial described in the accompanying introductory booklet?

Getting Started

This section details the process for entering Micro Planner. If you have already done this in the introduction booklet then skip to the next section headed *Building the Network*.

You need a *Macintosh* with at least 512K of memory and an external disk drive or a hard disk drive. You will also need an Imagewriter Printer or a Laserwriter. Link them together as described in your hardware user guides.

The first thing to do is to open Micro Planner from the Finder.

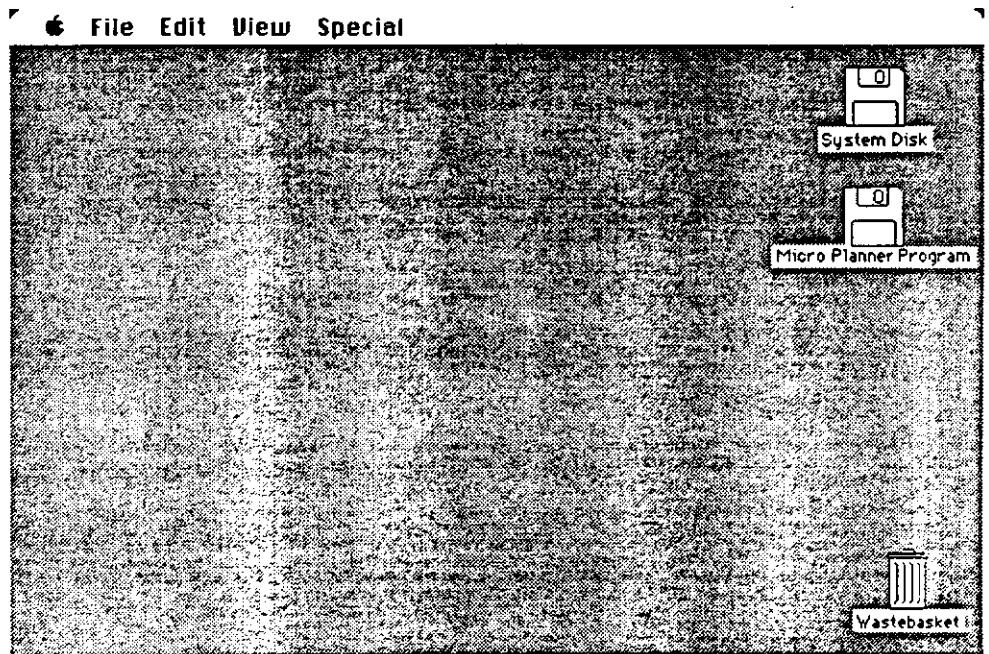
Either, for a hard disk system:

- Power up the Macintosh and the hard disk if appropriate.
- Insert the Micro Planner Program disk, metal end first, into the floppy disk drive.

Or, for an external disk drive:

- Power up the Macintosh and insert a system disk, metal end first, into one of the disk drives (usually the internal drive).
- Insert the Micro Planner Program disk into the other.

The menu bar and the appropriate disk icons appear on the screen similar to this:



Whether you are using a hard disk or an external disk drive system, the next step is to select and open the Micro Planner disk.

There are two ways of doing this:

Either,

■ **Select the Micro Planner disk icon.**

This means: Position the pointer on the program disk icon then press the mouse button and release it. The icon turns black when it is selected.

■ **Choose OPEN from the File menu.**

To do this: Position the mouse pointer over the File item on the menu bar at the top of the screen and press the mouse button. Notice that a 'pull down menu' appears. Keeping the button pressed, drag the pointer downwards. Release the mouse button when the Open command turns black.

File	
New Folder	⌘N
Open	⌘O
Print	
Close	
Get Info	⌘I
Duplicate	⌘D
Put Away	
Page Setup	
Print Catalog	
Eject	⌘E

Or, taking the short cut,

- Double click the Micro Planner disk icon to open it.

To do this: Position the mouse pointer over the program disk icon and click twice in short succession on the mouse button.

The disk window opens to reveal an icon representing the Micro Planner program. On a color system, this icon is red.



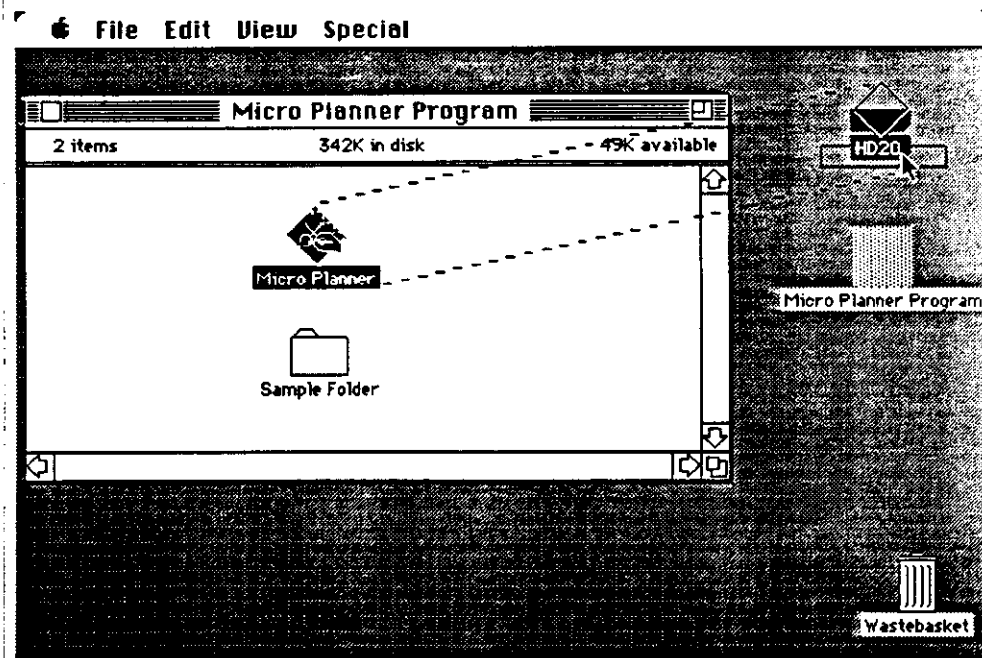
Micro Planner

For HARD DISK systems only:

To install Micro Planner, copy the program onto the hard disk as follows:

- Drag the Micro Planner program icon onto the hard disk.

To do this: Select the Micro Planner program icon and, keeping the mouse button pressed, drag its outline to the hard disk icon. Release the mouse button when the hard disk icon turns black.



Once the copying message disappears, you may safely remove the original program disk like this:

- Click the 'close' box in the top left hand corner of the program disk window.

- Choose Eject from the File menu.

The disk is ejected and may be kept in a safe place.

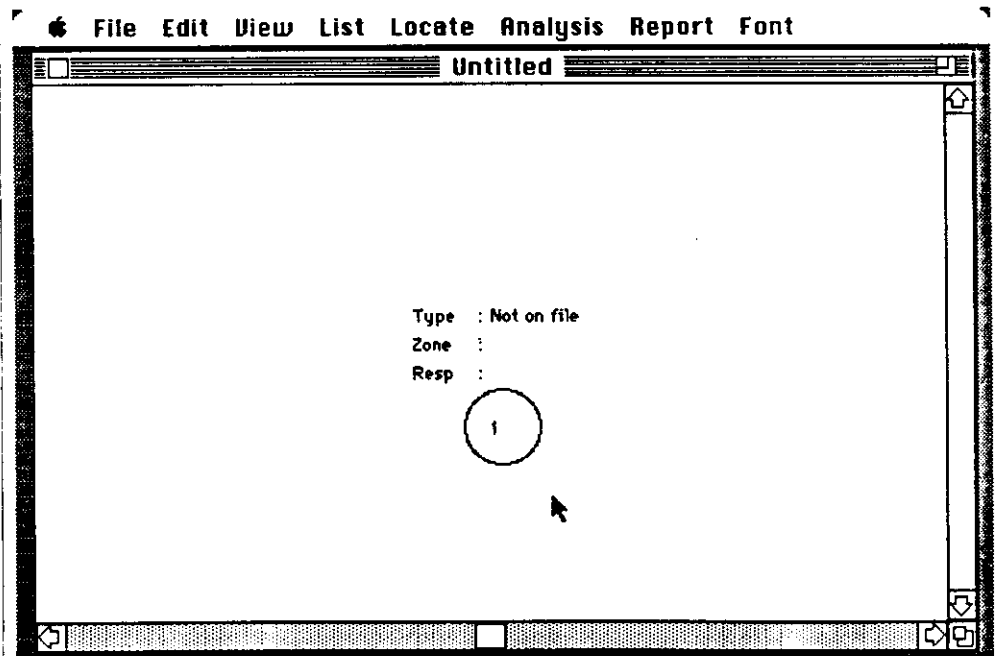
- Open the hard disk by double clicking on its icon.

Now, for both HARD DISK and EXTERNAL DISK DRIVE systems:

- Double click the Micro Planner icon to open it.

Note: If Micro Planner has been stored inside a folder, you must open the folder icon first to reveal the Micro Planner icon.

Once the desktop clears, the Micro Planner title screen is briefly displayed before this screen appears....



The network screen has a title bar, close box, size box, zoom box and scroll bars which are explained in your *Macintosh* owners guide. The project name is preset to 'Untitled'.

Building the Network

Building a project model is like piecing together a child's modelling kit except, instead of rods and connectors, Micro Planner uses **arrows** and **circles** like this:



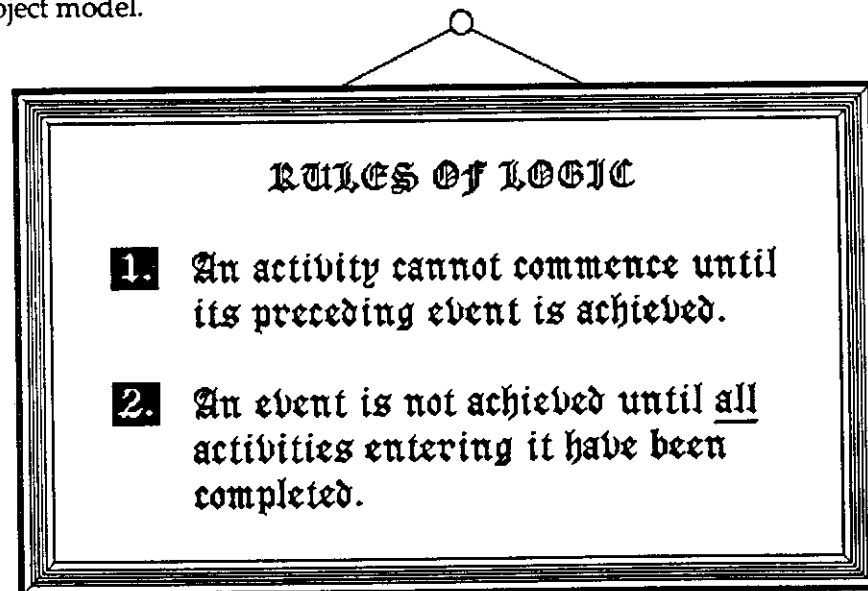
The arrows are the primary components in the network - they represent the actual operations or **activities** which take time to accomplish and may use resources (people, equipment, materials and money).

The circles represent **events** which are best described as 'points in time' - they merely form the junctions between activities.

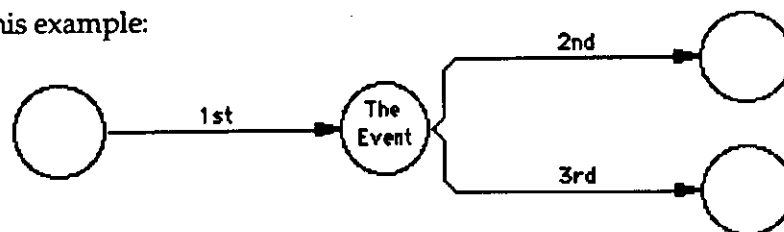
Unlike activities, events do not represent any action or operation, do not take any time nor employ any resources.

Rules of Logic

Once you have fixed the different roles of activities and events in your mind, there are only two simple rules to observe when constructing the project model.



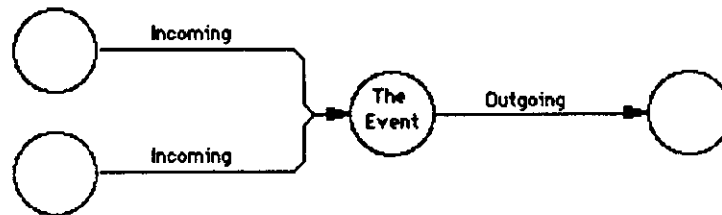
In this example:



The event is not achieved until '1st' is complete, therefore, neither '2nd' nor '3rd' can start until '1st' is complete .

Note: '2nd' and '3rd' are both free to start at the same time and to continue 'in parallel' but are not compelled to do so.

In this example:



The event is not achieved until both incoming activities are complete, therefore, the outgoing activity cannot commence until both incoming activities are complete.

Note: When both incoming activities terminate at the same event it does not mean that they *must* both complete at the same time.

Strict Logic

A word of caution! Do not rob Micro Planner of its freedom to produce the best solution by imposing false logic or building prejudices into the network such as...

'It is impossible to start these two activities together because they share the same unique resource, therefore, one activity must follow the other'.

Or,

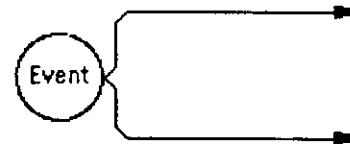
'It is too early to start this particular activity, therefore, it must be linked to a later operation simply as a delaying tactic'.

The program can only work with your logic - if the logic is faulty then your schedule is faulty.

You soon find out the results of your modelling. If you are not happy with them, remember that Micro Planner gives you the opportunity to experiment until the required result is achieved.

Events

As previously described, events act as the bolts which hold your network model together. They represent the starting point for one or more activities like this:



or the end point for one or more activities like this:-



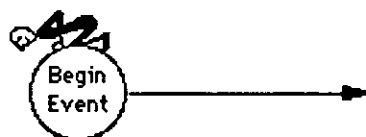
Events have names which may be either numbers or letters. These names are used to identify individual activities as discussed in the section headed *Activity Identification*.

Event Types

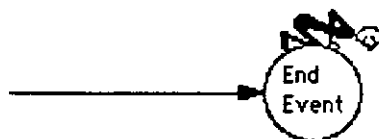
Micro Planner knows that an event must exist at the beginning and end of each activity so supplies them automatically. Do not waste your time entering event types unless they are special events.

Event Types
Begin Event
End Event
Key Event
Reverse Logic
Normal Event

Introductions to each of the special types are examined in their context but look at Begin and End Events now...



When you build a network model there is a point where you start - a point which has no operation before it. That is a Begin Event.



Similarly there is a point at which your project finishes. That is an End Event.

Note: Your project may have several Begin or End events as discussed later in this chapter.

When you want to add a special type, first ensure that the appropriate event is in the center of the window....

■ Click on the appropriate event to centralize it.

An event is centralized when the Type, Zone and Responsibility labels are displayed above it.

Type : Not on file
Zone :
Resp :

■ Double click on or near the circle to open the event.



This means: Position the mouse pointer on the event and click the mouse button twice in quick succession.

The menu window appears showing the available types.

■ Select the type you want by clicking on it.

Only Key Events need descriptions but if you feel you absolutely have to describe other types of event then:

Type : Begin Event
Zone :
Resp :



■ Click in the description area.

To do this: Move the pointer to the area below the circle and, when the pointer changes to an 'I-beam', press the mouse button.

■ Type your description.

The next section on activities explains how descriptions may be edited.

■ Click the OK button.

OK

Remove

Cancel

As you enter a project, you may start from event 'I'. If, at any time, you want to start building from an event with a name of your own choice then do this:

■ Select Move to from the Locate menu.

Locate

Search...

Move to...

Move To

Enter Event to Move To :-

OK Cancel

An unnamed event appears and you are prompted to:

■ Type any name of up to four letters or numbers then click OK.

Now you may start building from that point. If that event were already in the model it would, of course, appear with its associated logic.

Activities

Your project is constructed from activities which look like this:

An activity means that something is planned to happen, starting at the tail and ending at its head. Activities may take time to complete and employ resources which could be people, machines, materials or money.

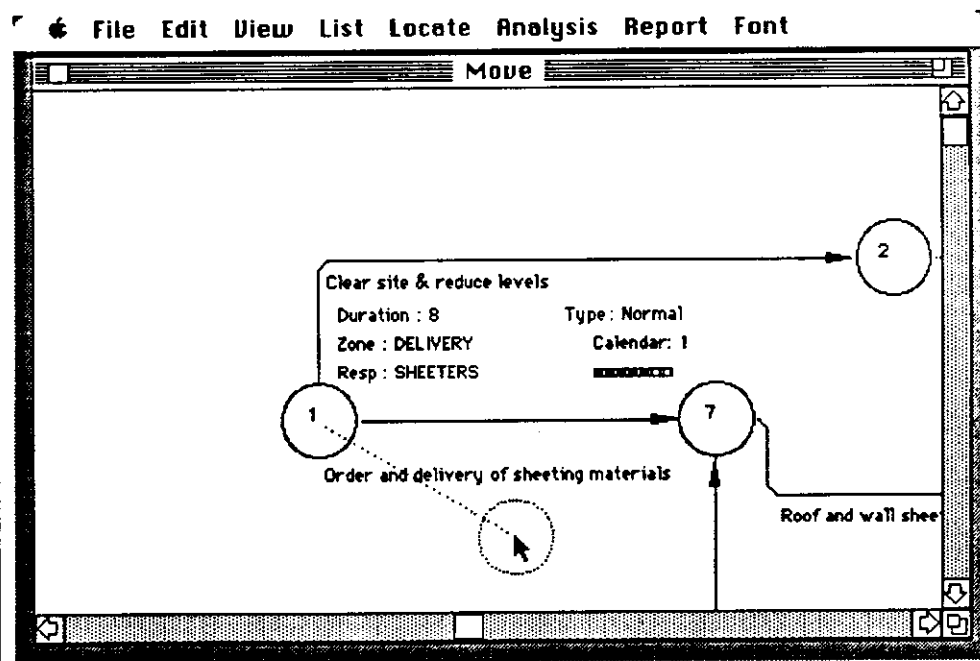


An activity can be created from a centralized event or from the events at either end of a centralized activity - you can see if an item is centralized when its Type, Zone and Responsibility labels are displayed.

To create an activity which follows an event:

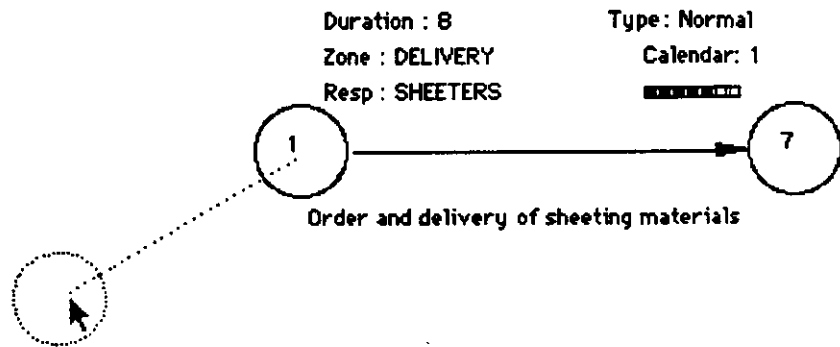
■ Click in the event, drag towards the RIGHT of the window and release.

To do this: Position the mouse pointer inside the circle, press the mouse button and move the pointer with a ghost event attached to it towards the right. Release the button to create an activity.



To create an activity which precedes the event:

■ Click in the event, drag towards the LEFT of the window and release.



The activity now appears in the window.

The name of the root event is in the appropriate circle - Micro Planner automatically supplies the *next unallocated event number* for the other circle.

Activity Identification

Each activity has a unique identity based on its preceding and succeeding event names - these are the names assigned to the circles at its beginning and end.

When you create an activity, the program invents the next unused event number.

Bear in mind:

This new event number launches you into new territory.

If you want to link to an existing event or if you prefer to specify the name of a new event then you are able to replace the preset name with one of your own.

To do this, the preset name must be selected so, if it is not already highlighted...

■ Move the mouse pointer into the appropriate circle.

An I-beam appears.

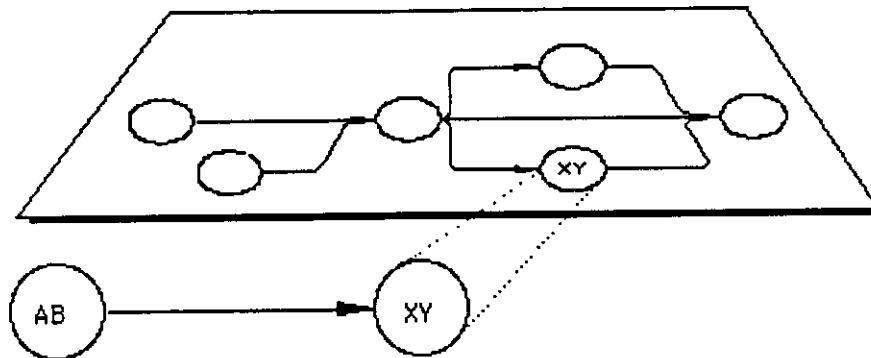


Either, if the event name is not broken by any spaces,

■ Double click the event name to select it.

Or,

■ Position the I-beam at the start of the event name and, while holding the mouse button, drag to the end of the event name.



Now, once the event name is highlighted:

■ Type the name of the event you are linking.

Otherwise, to move into new territory of your own choice:

■ Type a new event name using a maximum of four letters or numbers followed by the Return key.

Event names may be edited in the usual *Macintosh* fashion.

Inventing Event Names

Micro Planner allows to you to invent unused event names like this:

■ Type ? Instead of an event name as previously described.

You may also personalize the invented names by attaching a suitable suffix or prefix as follows:

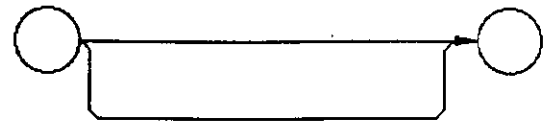
■ Type AB? to invent the next event name commencing with AB.

Similarly,

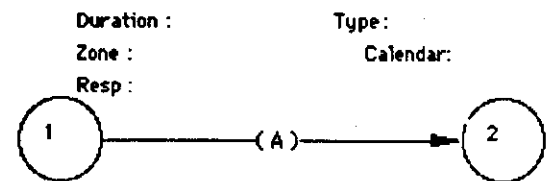
■ Type ?3Q to invent the next event name ending with 3Q.

Activity Uniqueness

There is no reason why two activities should not start and finish at the same events like this:

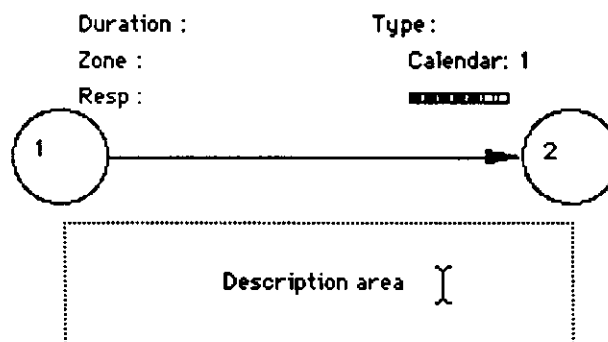


In these circumstances, Micro Planner maintains the activity uniqueness by labelling such parallel activities with letters of the alphabet as you see here:



Description

Every activity requires a description to define the intended operation.



■ Click in the description area below the arrow.

To do this: Move the mouse pointer anywhere into the area and, when the I-beam appears, click the mouse button.

■ Type the description you require.

Descriptions may have a maximum of 254 characters and any visible character can be used so please do not feel inhibited about describing the activity in full. Also, do not be concerned about any typing errors or the possibility of future amendments as the next section explains how these descriptions may be edited.

Editing Descriptions

When you are in the description area you may take advantage of the text editing facilities which are used on other *Macintosh* applications.

Selecting Text

1. Single words:

■ Place the I-beam over the word and double click.

3. Entire text:

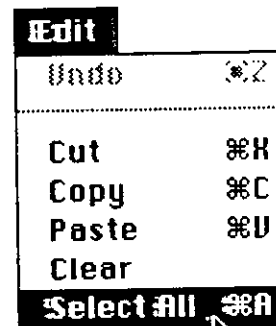
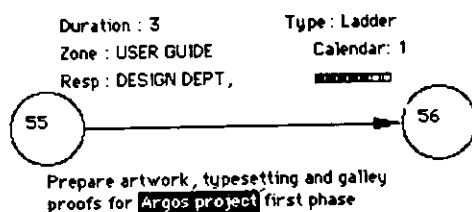
■ Click anywhere in the description area.

■ Choose Select All from the Edit menu.

2. Portions of text:

■ Move the I-beam to the start of the chosen text and, while pressing the mouse button ...

■ ... drag the I-beam to the end of the chosen text then release the button.



Replacing Text

■ Select the text as above and type new text.

Removing Text

1. Backspacing:

If you want to remove text which is of no further use...

- Select the appropriate text and press the Backspace key to delete.

Backspacing does not place the deleted text into 'temporary storage' on the Clipboard.

Edit	
Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘V
Clear	
Select All	⌘A

2. Clear Command:

This command removes the whole description.

- Choose Clear from Edit menu.

The description is not placed in the Clipboard.

3. Cut (or Copy) Command:

You may remove (or duplicate) the selected text and then 'implant' it elsewhere.

- Select the appropriate text then choose Cut (or Copy) from the Edit menu.

The deleted text (or a copy of it) is placed on the Clipboard where it remains until the next Cut or Copy command.

If you want to paste the text into the description for a different activity:

- Ensure that the required activity is centralized and opened.

- Position the I-beam at the point where you want to insert the text and click.

A vertical cursor appears.

- Choose Paste from the Edit menu.

Note: The Clipboard only remembers the last piece of text cut or copied. If you wish to get rid of unwanted text without overwriting your Clipboard then choose the Clear or Backspace options.

For more information, turn to the *Macintosh* hardware user guide which explains the editing facilities in more depth. Learn the editing facilities as they will make life easier. If you have a string of text which is entered quite often in your descriptions, copy it into the Clipboard and paste it whenever it is required.

Duration

The time taken to accomplish each operation in the network is entered in the form of an activity duration. The duration you assign to each activity may be based on experience, calculation, consultation or pure guesswork...

...however, durations are the basic elements of Time Analysis so the more accurate they are, the greater the accuracy of your schedule.

When you create an activity, Micro Planner assigns a duration of 0.

Some special activities which are examined later can accept durations of zero. Unless you enter one of these special types of activity, Micro Planner complains when no duration is entered so...

To enter a duration:

■ Move the mouse pointer to the right of
Duration: and, when the I-beam appears ...

Duration : 0

■ ... double click to select the duration.

You may now enter the duration like this:

■ Type the duration in the form: 3,4 meaning 3 weeks and 4 days.

Note: The comma marks the division between weeks and days.

If you want to express a duration in days then type only the comma followed by the number of days. Therefore ,4 means 4 days.

Similarly, you may ignore the comma and day if you want weeks. Thus 3 on its own means 3 weeks.

Durations may be edited in the usual *Macintosh* fashion.

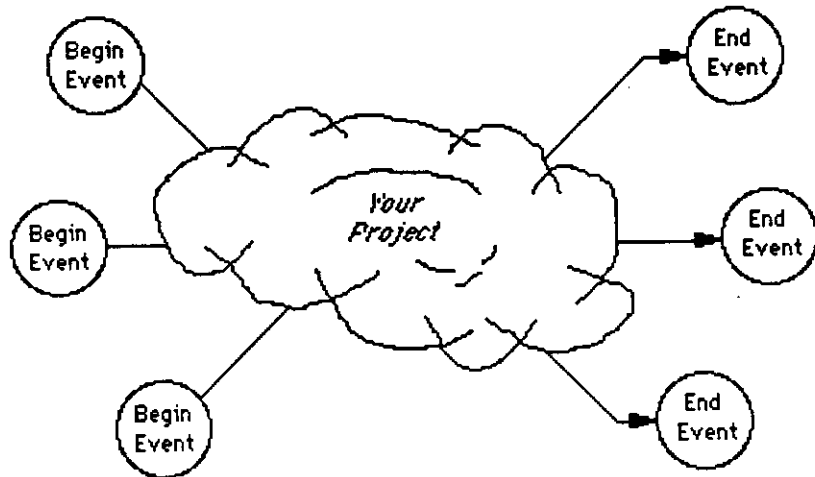
Accepting an Activity

When an activity is the way you want it then...

■ Click the OK button to accept it.

Multiple Begin and End Events

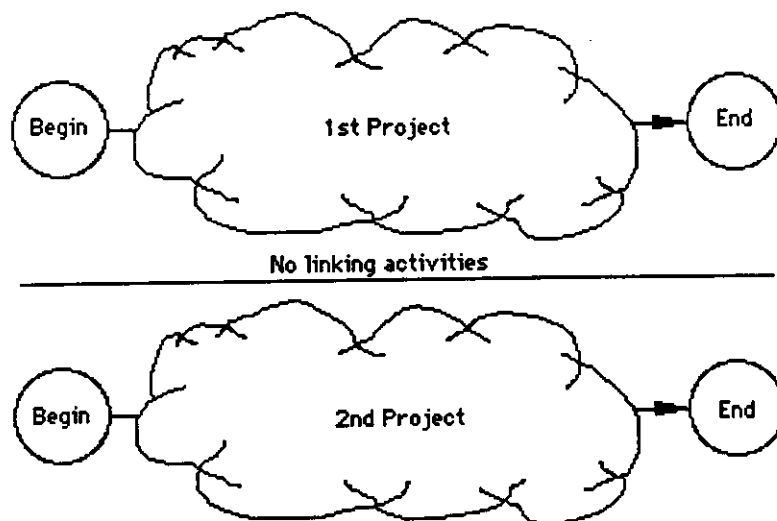
Micro Planner enables you to have lots of Begin or End events so please don't feel you have to tie your activities all into one start point or finish everything at one final event.



Multiple Projects

In the previous illustration, it is not essential that the project data is completely integrated. You may, therefore, have a number of unrelated projects in the same network model.

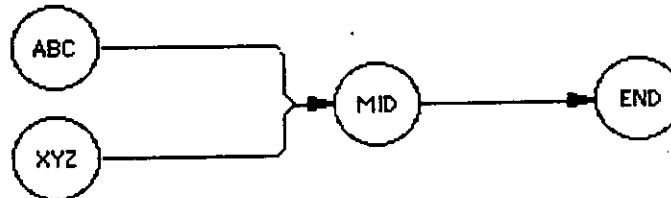
This means that you may have multi-project analysis where a group of projects are analyzed as one, using the same resources like this...



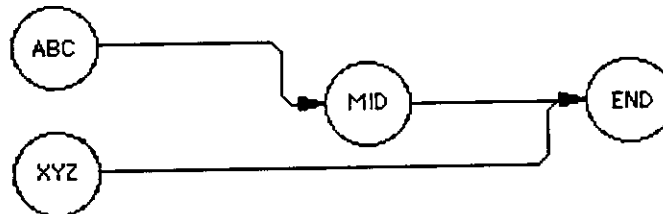
Re-Linking Activities

If you change your mind about the way operations should be linked, they may be re-linked by altering the appropriate event names.

In this example:

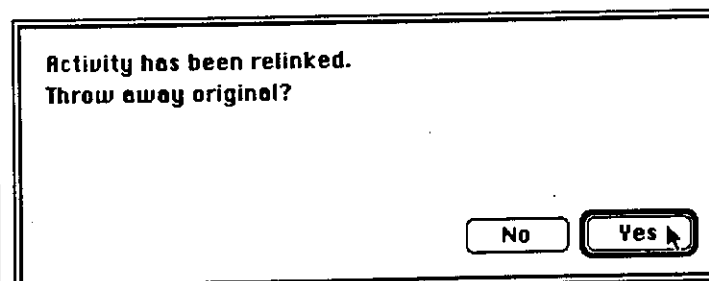


Let's unlink the lower activity from event MID and re-link it to event END.



- Double click on activity XYZ→MID to open it.
- Move the mouse pointer into the right hand circle and, when the I-beam appears, double click on the event name MID to select it.
- Type the new event name END.
- Click the OK button.

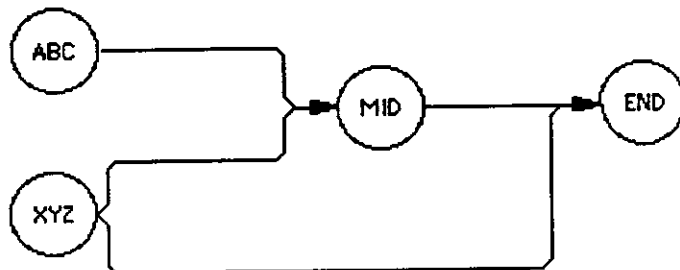
Macintosh noises (beeps, howls or dings) accompany the following message:



- Click Yes.

Duplicating Activities

In the last example, if you had clicked No then you would have ended up with two copies of the same activity linked to different succeeding events.



The re-linking process, therefore, may be used to duplicate activities.

This means you may 'clone' an activity to appear elsewhere in the network model by, firstly, changing both or either of the preceding or succeeding event names and, secondly, keeping the original activity.

Deleting Activities or Events

Sooner or later you will want to remove an activity from the network.

- Click on the activity to centralize it.
- Click twice to open the activity.
- Click the Remove button.

The program seeks confirmation before removing the activity.

If you decide to keep the activity:

- Click No.

Otherwise,

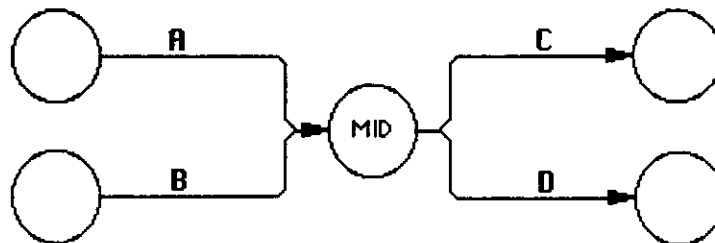
- Click Yes to remove the activity from the network model.

Use the same technique to remove an event.

The Dummy Activity

The Dummy activity, as its name suggests, does not represent an actual operation - it is purely a logic link between two events.

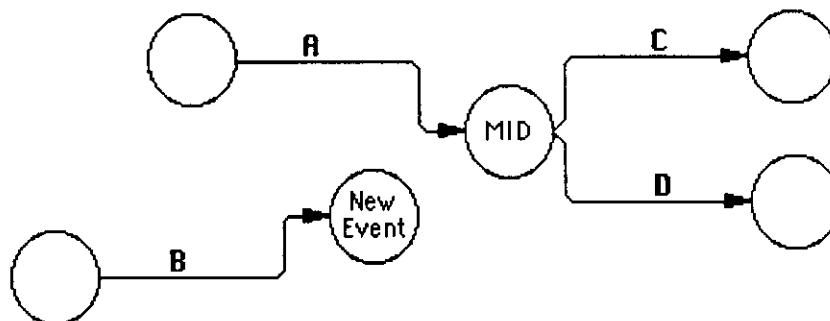
Consider the following situation.....



The rules of logic state that *neither* C nor D may start until *both* A and B have been completed.

If, however, D depends on the completion of B only (and not A) but C must wait for the completion of both A and B then the logic may be modified like this:

First create a new succeeding event for B.



■ Open activity B and move the mouse pointer into the right hand circle.

■ When the I-beam appears, select the existing event name.

To do this: Double click on the event name or, if the name contains spaces, click and drag the I-beam over the event name.

Either,

■ Type a new event name followed by the Return key.

Or, to invent the next unused event number:

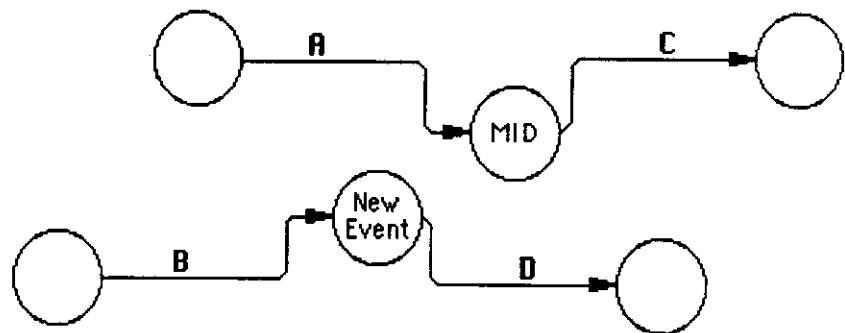
■ Type '?' followed by the Return key.

Note: Remember that you may attach a personalized prefix or suffix to an invented event name.

■ Click OK.

■ Click No - you do not wish to keep the original.

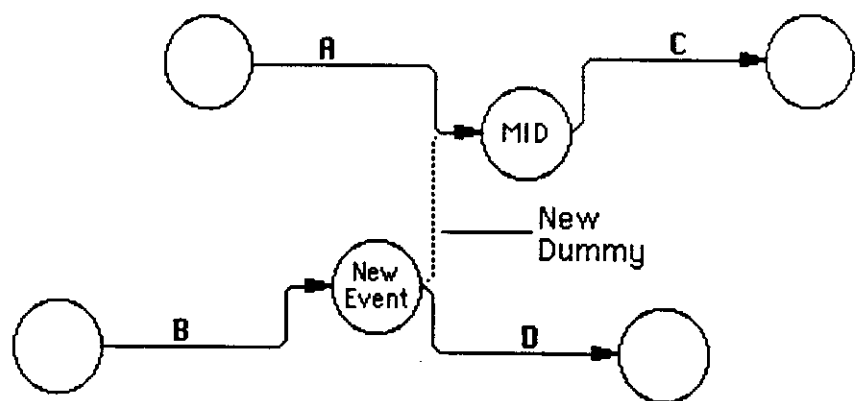
Now re-link D to this new event:



■ Open activity D and change the name of its preceding event to that of the new event.

■ Click the OK button followed by the No button as before.

Finally, insert a dummy activity between the new and original events.



Create the dummy activity like this:

■ Click on the new event, drag to the right and then release the mouse button.

■ Type the name of the original (MID) event in the right hand circle of this new activity.

■ Leave the duration as zero.

A dummy usually has no duration.

■ Change its Type to Dummy.

To do this: Click to the right of the Type: label and all the types appear in a window. Select Dummy by clicking on it.

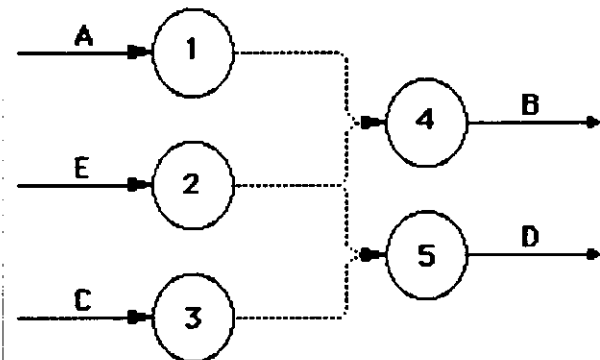
■ Click OK.

This means that C cannot start until B has finished. Furthermore, the start of C may be delayed by assigning a duration to the dummy activity.

In the new structure, notice that D is no longer delayed by A.

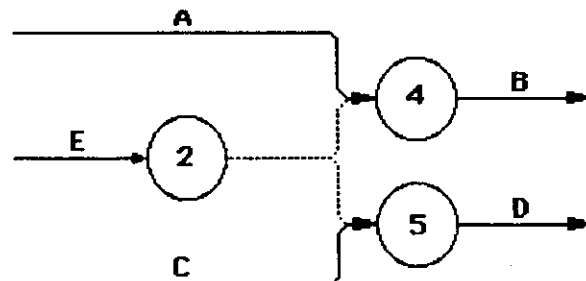
Activity Types
Start flag
Finish flag
Dummy
Ladder
Lead
Log
Non-Split
Hammock
Consecutive
Normal

One final point on dummies - USE SPARINGLY!



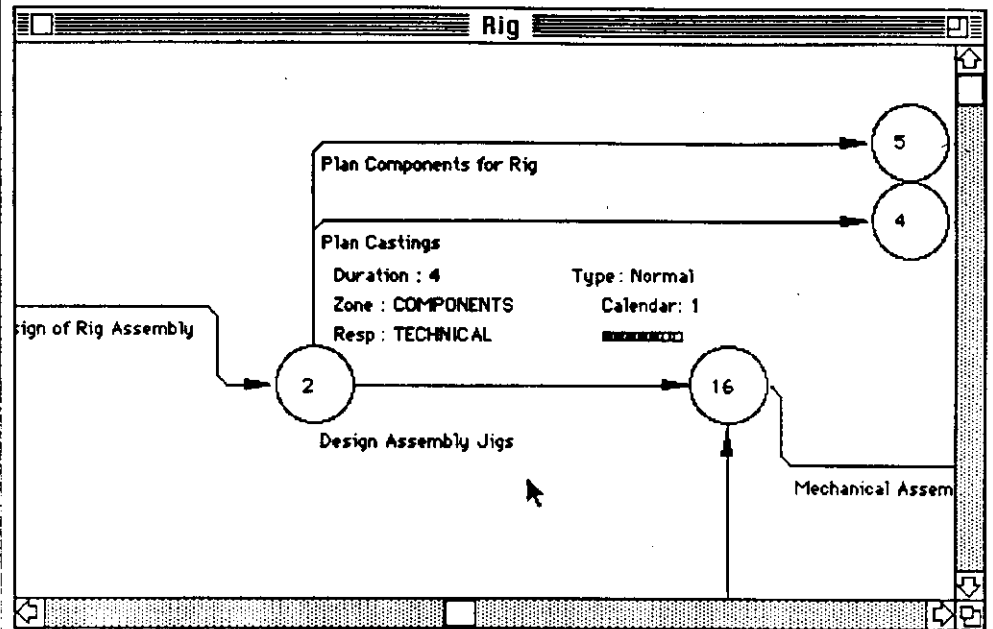
The logic in both of these diagrams is equally correct but in the first, dummies 1→4 and 3→5 are unnecessary.

Unnecessary dummies are more of a hindrance than a help - they complicate the network and waste computer memory.



Screen Organization

Always remember that when you see the network displayed on the screen you are, in fact, looking at a single activity in the network - the selected activity appears in the center of the screen with all associated logic gathered around it.



Micro Planner groups the associated activities around the centralized activity like this:

1. Activities entering from the left of the screen.

These activities must be completed before the centralized activity can start. To see more of these preceding activities, use the arrows or 'thumb' in the horizontal scroll bar to move leftwards then move upwards using the vertical scroll bar.

2. Activities leaving upwards to the top right of the screen.

Activities which start at the same juncture as the centralized activity are drawn upwards from the preceding event to the top right of the screen. To see more of them, you may scroll rightwards and upwards.

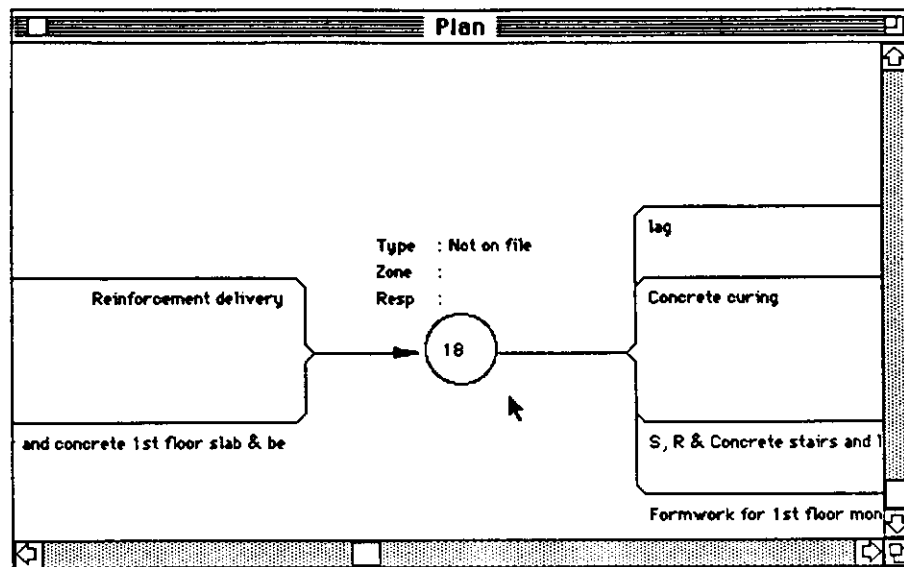
3. Activities entering from the bottom of the screen.

There are additional activities which determine the achievement of the succeeding event as well as the centralized one. They enter from below into the succeeding event. To see them you may scroll down and left.

4. Activities leaving to the bottom right of the screen.

Finally, activities which follow this one can be seen exiting to the bottom right of the screen. To see more of them, scroll right and down.

If an event is centralized the organization is similar:



Notice that the scroll bar facilities are local to the centralized activity or event. The following section describes the various ways in which you can move from one part of the network to another.

Locating Operations

There are three ways of moving around the network:-

- 1) Panning
- 2) Moving
- 3) Searching

Panning

Starting from a centralized activity or event, you may move backwards and forwards (or 'pan') through the network examining the way in which activities are linked together.

To move across your network:

- Click an activity which takes you in the direction you wish to go.
- Continue this operation either backwards or forwards until you reach your destination.

A form of 'panning' occurs each time an activity is added to the model - you start and finish with a different activity centralized on the screen.

You may leave 'panning' and then return to it without losing your current position in the network.

As the complexity of the network increases, panning may be a rather laborious method of locating a particular activity or event. If you know an event name or can remember a distinctive part of a description, use the Move or Search facilities to move to a specific point in the network.

Moving

The Move facility uses event names to locate specific events or activities.

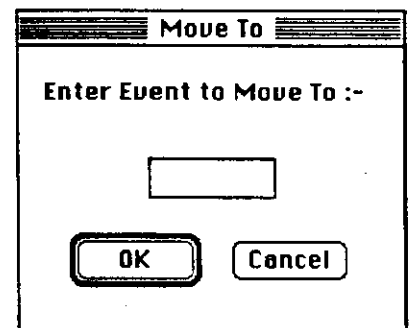
■ **Choose Move to from the Locate menu.**

You are asked for the name (or number) of the event you wish to locate.

■ **Type the event name.**

■ **Press the Return key or click OK.**

You are returned to the network and the specific event is centralized on the screen.



Searching

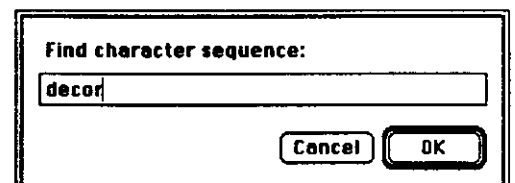
'Search' helps you to locate an activity or event by finding a string of characters in its description.

■ **Choose Search from the Locate menu.**

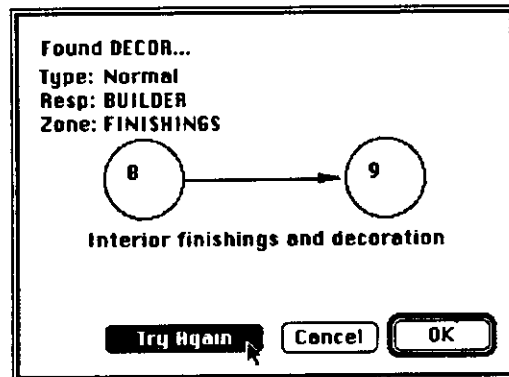
This message appears:

■ **Type a string of characters in the space provided.**

■ **Press the Return key or click OK.**



The string can be any word, part of a word or group of words. Whether alphabetic characters are capitals or lower case makes no difference. Choose characters which are most helpful in locating the required item.



Micro Planner searches every activity and event in the project to find your string. When it finds the first one, the activity or event is displayed.

If the first one found is not the one you are looking for then:

■ Click the Try Again button to see any more items.

Otherwise,

■ Click the OK button.

If you prefer not to move:

■ Click the Cancel button.

Activity and Event Lists

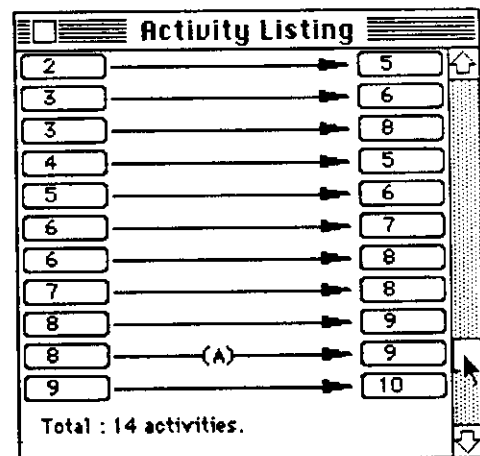
There may be times when a quick look through the activities will help you to recapitulate. The List facility prepares a simple screen list of all of the activities in your project which illustrate their preceding and succeeding events.

■ Choose Activities from the List menu.

Each activity is listed in numeric order as an arrow between two events. Where there is an uniqueness identifier, the character is displayed in the middle of the arrow.

Use the usual scroll bar facilities to scroll down the list. At the end of the list, the total number of activities in the project is displayed.

■ Click the 'close' box to leave.



Special events may be listed in a similar way...

■ Choose Events from the List menu.

Dangles

As mentioned earlier, Micro Planner permits more than one start or finish point and each one needs to be identified as a Begin or End event.

If there are any loose ends in your project, they are flagged as 'Dangles' when the model is time analyzed.

Correct a dangle like this:

■ Choose Move to from the Locate menu.

■ Enter the name of the event which Micro Planner objected to and click OK.

Either:

■ Make it into a Begin or End event.

This means: Open the event and select Begin or End event from the Event Type menu as described in the section *Event types*.

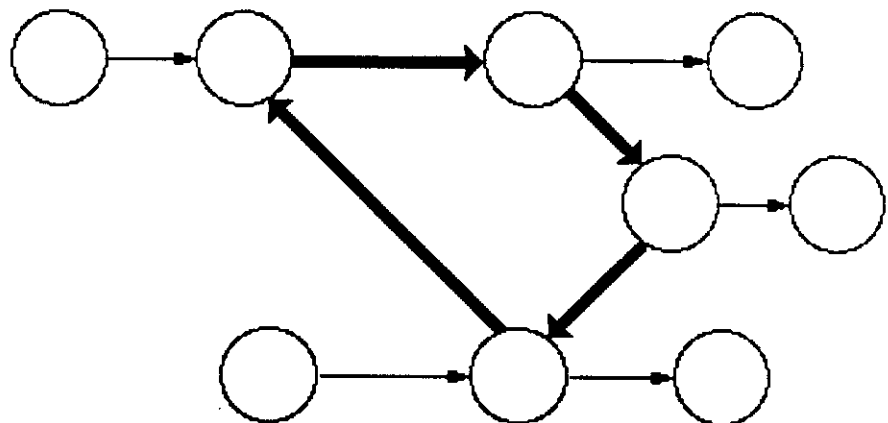
Or,

■ Link it correctly.

To do this: Open the activity associated with that event and change the event name to what it should be. If the logic is not appropriate, a dummy or additional activity could serve as the link.

Loops

It sometimes happens that activities may be linked together to form a loop like this:



There is literally no future in this diagram and it is not logical. Examination of the logic always reveals that, somewhere in the loop, there is an event where one or more activities are being delayed in error. The logic needs amendment.

Project Details

When you start a project for the first time, Micro Planner provides you with a set of working calendars which are available immediately. You may, however, customize these and other information to suit your own project.

View

- Project Details...**
- Network
- Full Details %F
- Resources Used... %R
- Resources Available...
- Reduce to fit
- Barchart...
- Histogram...

To do this:

- Choose Project Details from the View menu.

Project Title: Unique project heading

Time Now: 15-Jun-87 **Base Date:** 6-Apr-87

Weekly Cycle

Col.	MTWTFSS
1	■ ■ ■ ■ ■ □ □
2	■ ■ ■ ■ ■ □ □
3	■ ■ ■ ■ ■ □ □
4	■ ■ ■ ■ ■ □ □
5	■ ■ ■ ■ ■ □ □
6	□ □ □ □ □ ■ ■

June 1987

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	-	-	-	-	-
-	-	-	-	-	-	-

Last Month Last Year

Next Month Next Year

OK Cancel

Comment

The above screen appears.

If you wish to leave the details as they are at entry time (even after changing some of them) click the **Cancel** button.

If you click the **OK** button then any changes are accepted.

Project Comment

This project was prepared by K.A. Stock 15-Jun-87 (first draft)

Cancel OK

Project Title

You may give your project a title which appears on all reports:

- Look in the box next to Project Title: on the screen.

If it is selected (highlighted) then:

- Type the title of your project.

Project Title:

The information in the Project Title box may be edited in the usual *Macintosh* fashion.

To select a title:

- Move the mouse pointer to the start of the text you wish to select.
- Click the mouse button and hold it down.
- Drag to the end of the required text and release the mouse button.

Note: To select a single word, double click on it.

Once the text is selected, you may:

- Type new text to replace selected text.

Or,

- Press Backspace to delete selected text.

To insert text:

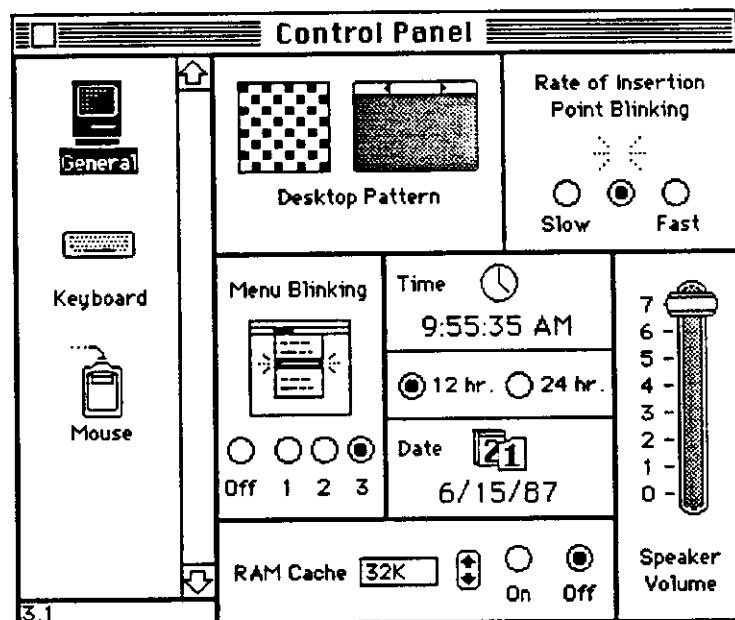
- Move the mouse pointer to the insertion point and click.
- Type the required text.

Base Date

When you first create your project, Micro Planner allocates a 'time zone' of 2144 days to your project. It looks at the system clock, drops back two months, moves forward to the first Monday it finds and allocates the Base Date which is the start of this time zone.

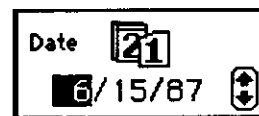
If your system date is wrong, reset it like this:

- Click Cancel or OK to leave the Project Details screen.
- Choose Control Panel from the Apple menu.



The time and date are displayed on the control panel.

- Move the cursor over an element of the time or date that needs to be re-set.
- Click the mouse button to highlight that element.



The up/down arrow controls appear.

- Click either the 'Up' arrow to advance or the 'Down' arrow to go backwards until the correct number is set.
- Alter any other elements of the date or time which require re-setting.

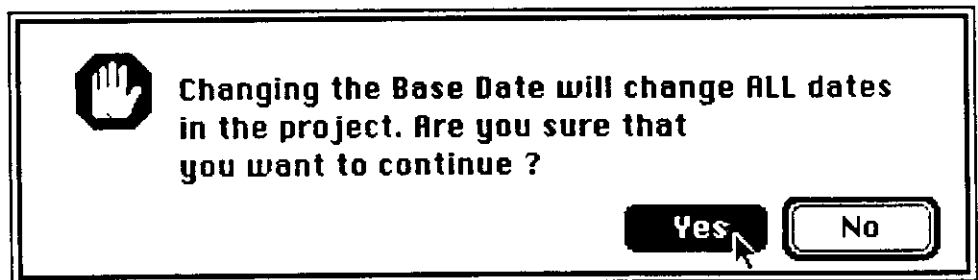
■ Click the 'close' box in the top left corner of the control panel.

■ Re-select Project Details from the View menu.

The Base Date is the earliest date this project can have in its calendar, the latest date is 2144 days later.

If, your system date was wrong or for any other reason, you must change the Base Date then...

■ Click on the Base Date.



Take heed of this warning - it means exactly what it says.

If you go ahead, all dates stored in your project will be altered including:

- 1) All scheduled starts and finishes.
- 2) All archived start and finishes.
- 3) All earliest dates and deadlines.
- 4) All holidays and extra working days in the calendars.

This means that, although the logic is maintained, your project should be thoroughly checked and re-analyzed to overcome these changes.

The effect of the alteration is to 'weigh anchor' and move the project into a different time zone. If, for example, you change the Base Date to one week earlier then all the dates will be one week earlier.

If you decide not to go ahead then:

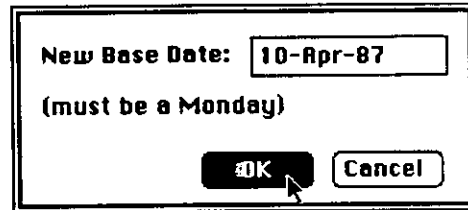
■ Click No.

Otherwise,

■ Click Yes to proceed.

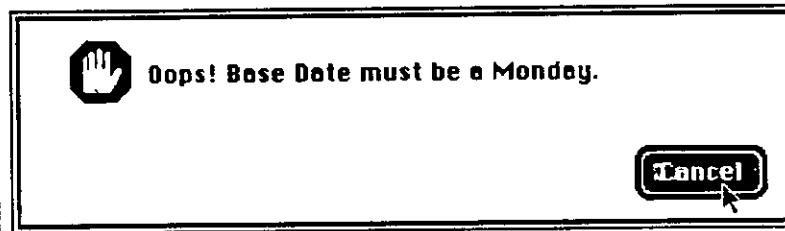
This box appears:

- Edit the existing date or type a new Monday date.
- Click OK.



New Base Date: 10-Apr-87
(must be a Monday)
OK Cancel

To make life easier, Micro Planner likes only Mondays as Base dates. So, if you enter a date that is not a Monday, the following message appears:



Oops! Base Date must be a Monday.
Cancel

Time Now

While the Base Date sets the 'absolute zero', Micro Planner also wants the date from which current analyses may be calculated - this date is called 'Time Now'.

Time Now may be modified as the project progresses but the Base Date is fixed.

On the day the project is first created, the program assumes Time Now to be that date. The date remains the same unless you alter it like this:

- Choose Project Details from the View menu.

- Double click on the Time Now date to select it.

Time Now:

15-Jun-87

- Type the new date.

Dates are entered in the form DAY (number), MONTH (first three letters) and YEAR (number) like this:

15jun87

Or, like this:

15-jun-87

You can edit the date in the same way as the project title or other text.

Weekly Cycle

In many projects, different disciplines require different weekly work cycles or 'Calendars' - these specify the working days and non-working days of the week.

For example, to avoid total disruption of business during the refurbishment of an office or factory, certain operations may need to be confined to weekends.

Such operations may be allocated to a 2 day calendar specifying Saturday and Sunday as working days while other (less disruptive) operations may be assigned to a 5, 6 or even 7 day work cycle.

Micro Planner has the facility to juggle six calendars simultaneously. When a project is first created, each of these six calendars has a preset work cycle like this:

Weekly Cycle	
Cal.	MTWTFSS
1	
2	
3	
4	
5	
6	

Notice that...

- Each cycle starts on Monday and finishes on Sunday.
- The black squares represent working days and the white squares are non-working days.
- Calendar No.1 is preset to a 5 day week, No.2 is preset to a 6 day week and so on.

The program preselects Calendar 1. This 5 day week is reflected by the standard calendar on the opposite side of the screen which displays the working dates as black numbers and the non working dates as 'outlined' numbers.

To select a different calendar:

■ Click anywhere on the appropriate row of black and white squares.

The new calendar is now framed by the black rectangle and the standard calendar opposite changes accordingly.

Once selected, a weekly cycle may be customized like this:

■ Click on the day(s) to be altered.

Each day toggles to the opposite - a working day becoming non-working or vice versa.

Note: If you are going to specify one calendar more than any other then make it No.1 because every new activity created is preset to Calendar No.1.

Holidays and Overtime

You may now wish to go through your diary finding those days which will be holidays. These may be national holidays, company holidays or you may even want a key person to have his own calendar with his own personal vacations excluded.

To change a working day into a holiday:

- Select the month by clicking on Next Month or Last Month.

(For larger jumps click on Next Year or Last Year)

- Move the mouse pointer over the day and click.

The date switches from black to 'outlined' numbers.

June 1987

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	-	-	-	-	-
-	-	-	-	-	-	-

Last Month

Last Year

Next Month

Next Year

Use the Next Year button when specifying annual holidays like Christmas.

If extra working days are required - like the odd Saturday or Sunday:

- Click on a non-working day to reverse it to a working day.

Notes: Holidays and extra work days must be entered individually for every calendar you are using.

If you decide to change a weekly cycle after you have entered holidays and extra work days then these non-standard days are wiped clear.

When dates start appearing in italic type, it means they are off the end (or beginning) of the project's 'time zone'.

Comment

You may wish to enter some comment about your project - who prepared the model, when it was last updated or the status of the project.

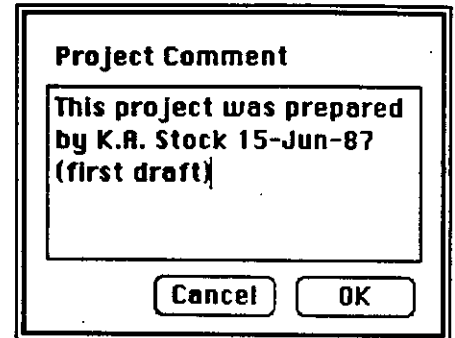
- Click the Comment button.

The comment window appears.

- Type the comment and click OK.

Or, if you wish to leave a comment without alteration,

- Click Cancel.



Comments may be edited in the same way as Project Titles.

Allocating Calendars

Having specified your calendars,

- Click OK to return to your network model.

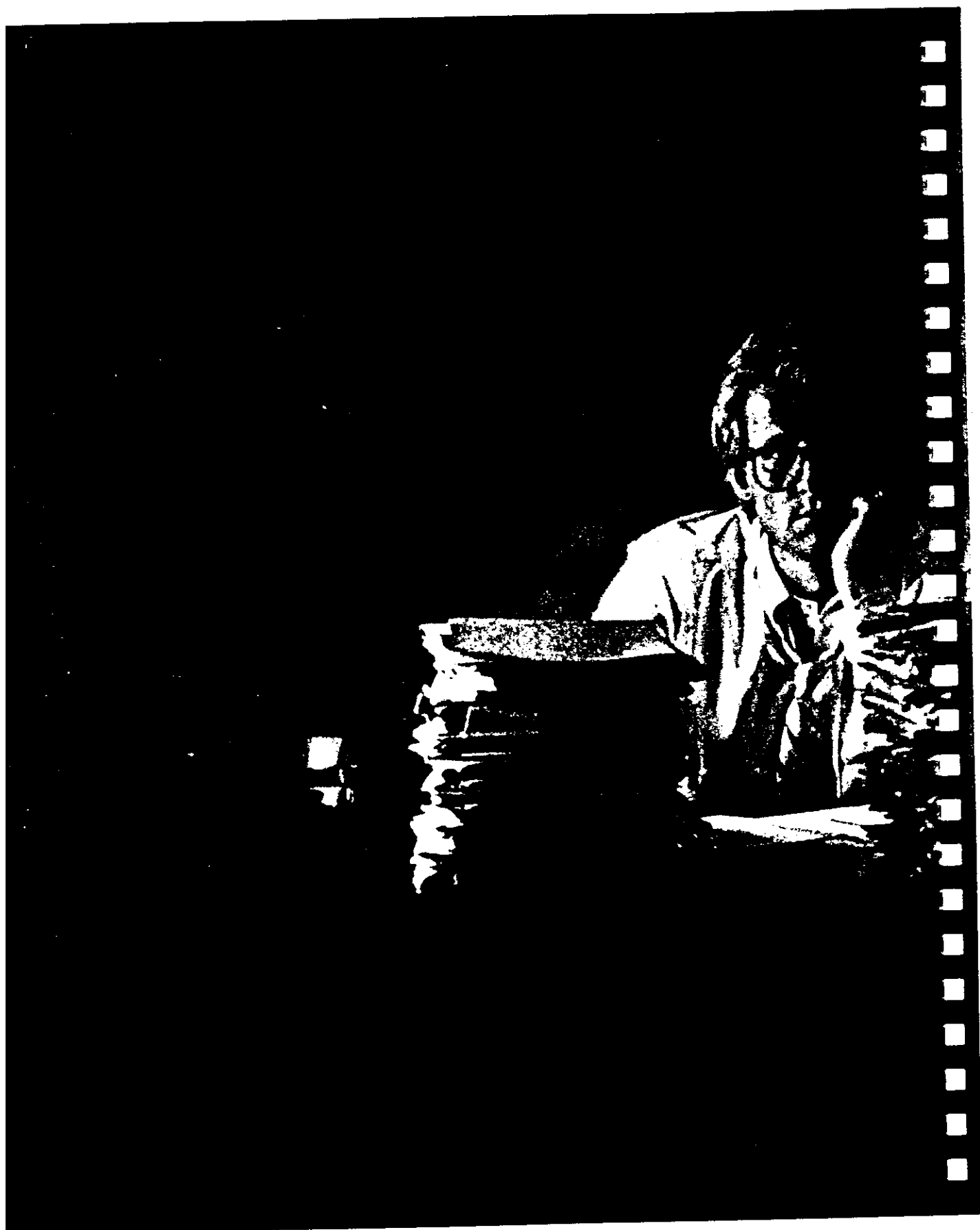
You may now wish to assign the appropriate calendar to each activity:

- Double click on an activity to open it.
- Move the mouse pointer to the right of Calendar: and click the calendar number.

The calendar number advances by one and, immediately below this, the pattern of the weekly cycle is displayed.

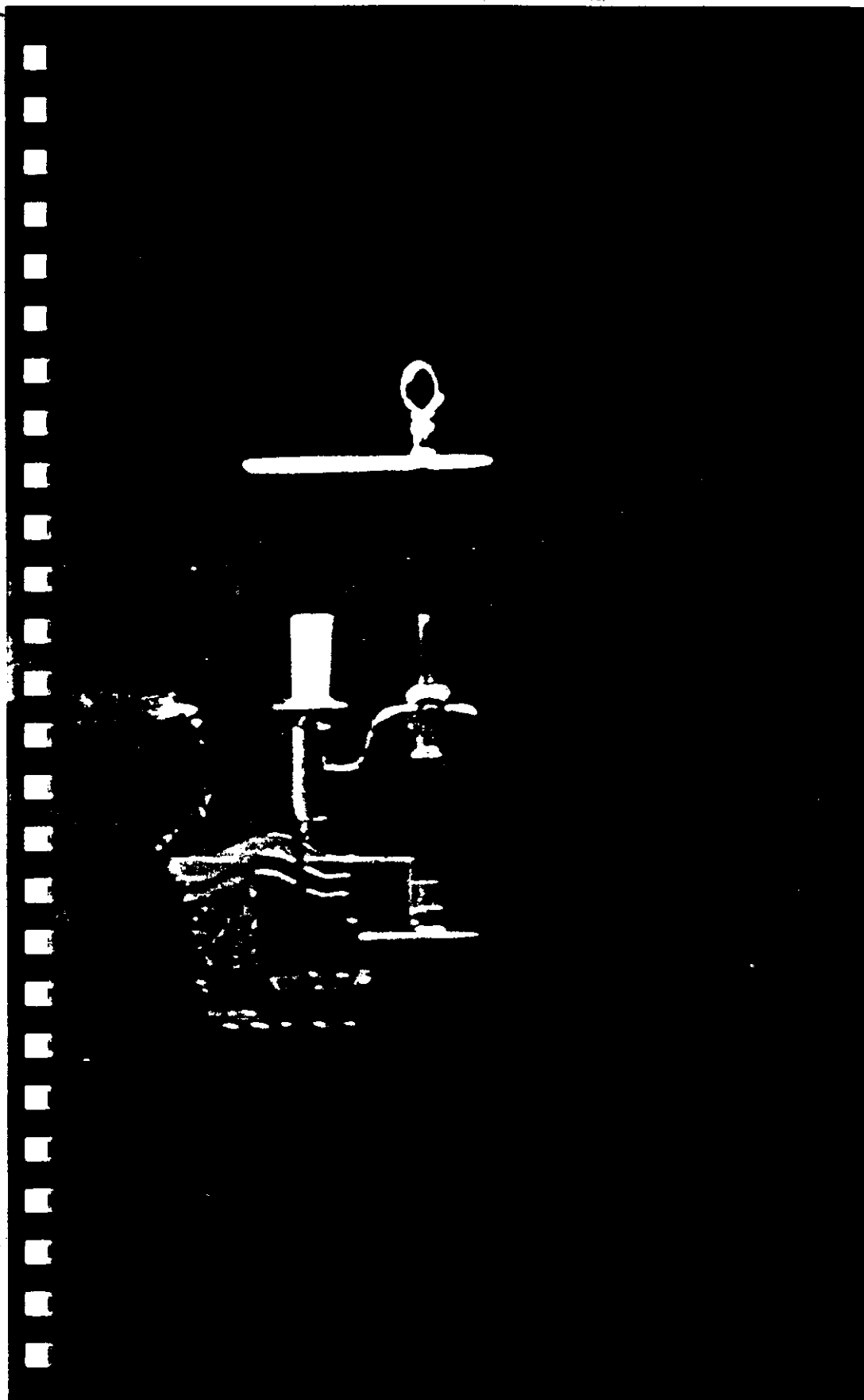
- Continue to click the calendar number until you see the one you require.

As the calendar changes, Micro Planner automatically recalculates the duration to maintain the correct total number of working days assigned to this operation. This means that an operation which takes 5 days to accomplish has a duration of 1 on a 5 day calendar or 2,1 on a 2 day calendar - think about it.



2

More
on
Activities



2

More on Activities

There's More!

Chapter 1 introduced the essential information for activities and events. This chapter goes on to examine the extra facilities you may use with your project.

Labels and sorting

This section introduces the subject of report presentation.

When you first start the project you may not be too concerned about how your reports are going to look, but the way in which you organize the project information will be important when communicating the schedules to other people.

Zones and Responsibilities

Zones and Responsibilities are labels which allow you to sort the activities into categories - Zones are the major divisions and within these are the minor divisions of Responsibilities.

There is nothing magical about the names Zone and Responsibility, they could be called Major label and Minor label.

You may, for example, wish to use Zone labels to represent the different phases in the project. Responsibility labels could then be used to allocate the work within each of those phases to the people or organizations responsible.

DELIVERY	
SHEETERS	Order and delivery of sheeting materials
STEELMEN	Delivery of structural steel
SUBSTRUCTURE BUILDER	
	Clear site & reduce levels
	Excavate and concrete foundations
	Drainage and floor slab
SUPERSTRUCT BUILDER	
	Blockwork
STEELMEN	Erect structural steelwork
Zones	
Responsibilities	Descriptions

In addition to showing a breakdown of the project data, these labels may be used to select activities for customized reports.

Let's examine how activities are labelled:

■ Double click on an activity to open it.

■ Move the mouse pointer to the right of Zone: and click.

The following window appears with empty cells marked A...Z and, unless you specify otherwise, Micro Planner uses this alphabetic code to sort the Zone labels. This means that the Zones will be printed on the report in the same order as they are placed in the cells.

List the Zones (or major breakdown) of your project in the order you want them to appear on a report - for example:

DESIGN
DELIVERY
MANUFACTURE
INSTALLATION
COMMISSIONING

Decide which cell should accommodate each label. It is often a good idea to leave a blank cell between each label in case you need to add more labels at a later stage.

Zones	
A	N
B DESIGN	O
C	P
D DELIVERY	Q
E	R
F MANUFACTURE	S
G	T
H INSTALLATION	U
I	V
J	W
K	X
L	Y
M	Z COMMISSION

OK No Label Cancel

Having decided on the Zones for your project, you may now attach the appropriate Zone label to this activity.

The vertical cursor appears to the left of cell A - if you want to use a different cell..

■ Click in the appropriate cell.

To enter the name of the Zone label:

■ Type the label using a maximum of twelve characters.

Labels look better if they are all kept as capitals - a random mixture of capitals and lower case may make your reports look untidy.

■ Click OK.

The Zone label is now attached to this activity.

Notes: It is, of course, possible to enter all your labels at once. Only the last label selected is attached to the activity.

You can place the same label in more than one cell.

The usual editing processes may be used on a selected cell.

Once a label exists, it can be used to label (or re-label) an activity like this:

■ Double click on the activity to open it and click to the right of Zone:

■ Click in the cell containing the required label to select it.

■ Click OK.

To remove a Zone label:

■ Open the activity in the usual way then click to the right of Zone:

■ Click the No Label button.

Zones	
A	N
B DESIGN	O
C	P
D DELIVERY	Q
E	R
F MANUFACTURE	S
G	T
H INSTALLATION	U
I	V
J	W
K	X
L	Y
M	Z COMMISSION

OK No Label Cancel

Responsibility labels behave in exactly the same way. When reports are sorted, however, they are sorted first on Zones. Responsibility labels are then employed to sort within each Zone.

Chapter 5 examines the way in which Zones and Responsibilities may enhance the presentation of reports.

These labels may also be attached to events.

Notes: Activities are attached to their labels by the alphabetic code. If, therefore, you move a label to a different cell then each activity using that label needs to be opened and re-labelled. If a label in a cell is edited, however, all activities in that Zone recognise the revision.

By the same token, if a label is deleted from a cell then blank labels are attached to all of the activities in that Zone but they will still be sorted on the existing alphabetic code.

Sort Code

Most of the time you may be content to sort on the basis of Zones and Responsibilities. On some projects, however, you may prefer to establish a more complex sorting hierarchy which works behind the scenes.

For this you can enter a Sort code on each activity.

When Micro Planner sorts items for presentation it looks at the Sort code as the first criterion. If the Sort code is blank or if the Sort codes being compared are the same it then looks at the Zone code. If the Zone codes are the same or are blank, it examines the Responsibility codes and finally the actual schedule dates.

Each Sort code may have a maximum of 8 characters which can be letters, numbers or a mixture of both. Micro Planner sorts these codes in alphabetic order - spaces come before numbers and numbers come before letters.

To enter a Sort code:

- Double click on an activity to open it.
- Choose Full Details from the View menu.

Imposed Dates	Progress Information	Analysis results	
Earliest:	Started :	Resource	Start Finish
Deadline:	Finished :	Archives	29-Jun-87 21-Aug-87
	Balance :	Master	22-Jun-87 14-Aug-87
	Sort Code:	Interim	Not analysed

- Move the mouse pointer to the right of Sort Code: and click when the I-beam appears.
- Type the required code.
- Click OK.

The 'Full Details' option can be toggled on/off. To stop the additional information window from appearing with each activity:

- Choose Full Details from the View menu to switch off.

Sort codes may also be used on events in the same way.

Progress Data

As your project gets underway, you may track its progress by recording the actual started and finished dates for each activity...

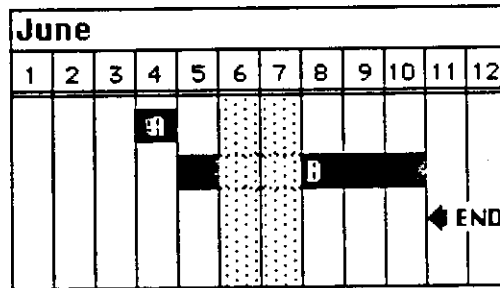
... but what, exactly, do we mean by these dates?

When a start date or a finish date is referred to, it means *the date ON WHICH the activity starts or finishes.*

In this diagram, activity A starts and finishes on 4-Jun-87.

A start date means the *beginning of that day* and the finish date means *the end of that day.*

There is, therefore, actually a difference of one day between a start and finish of the same date.



Similarly, if activity A finishes at the end of 4-Jun-87 then B may start at the beginning of 5-Jun-87. This means that there is a difference of one day between the finished date for one activity and the started date for the next. If, therefore, you record progress saying that both A finished and B started on 4-Jun-87 then you actually mean that B started one day before A finished because...

... if an activity is reported to have completed yesterday (evening) then the following activity cannot have started yesterday (morning) as well - think about it!

Finally, let's examine an event which does not have a duration. The event END sits on the line between 10-Jun-87 and 11-Jun-87. If you wanted to enter the progress date for this event, you would need to enter the *achievement* date which, in this case, would be 10-Jun-87.

Zero duration activities behave in the same way as events.

Started and Finished Dates

To enter progress dates:

- Double click on the activity to open it.
- Choose Full Details from the View menu.

The extra information window appears and you can concentrate on the Progress Information area.

To enter the date when this activity *actually* started (or finished):

Progress Information

Started :

Finished :

Balance :

■ Move the mouse pointer to the right of Started: (or Finished:) and click when the I-beam appears.

■ Type the appropriate date.

Dates are entered in the form DAY (number), MONTH (first three letters) and YEAR (number):

15jun87

Or, like this:

15-jun-87

Dates may be edited in the usual *Macintosh* fashion.

Notes: Unless you record a Finished date for an activity, Micro Planner does not assume its completion. The program will, however, assume the completion of dummies, leads and lags as discussed in Chapter 7.

If a Finished date is recorded or assumed but there is no Started date on record then the system assumes a Started date according to the duration of that activity.

Balance to Complete

When a Started date has been entered, Micro Planner calculates the time between the Started date and Time Now, deducts this from the duration and arrives at the portion of the duration which remains to be completed.

If you prefer to specify the remaining balance you can enter it like this:

■ Double click on the activity to open it.

■ Choose Full Details from the View menu.

The extra information window appears including the Progress Information area.

Progress Information

Started :

Finished :

Balance : 2,31

- Type the Balance duration.

Notes: If Micro Planner finds a Balance duration and no Started date, it assumes that the activity started at Time Now.

It is also possible to add both an earliest date and a deadline to an activity or event thus tending to fix it in time. To do this to event END, you would need to enter both an early date and a late date - in this case, the earliest date would be 25-Dec-87. The latest date, however, would be 24-Dec-87.

Chapter 4 on analyzing the project describes how earliest dates and deadlines perform.

To fix an imposed date:

- Double click on the activity to open it.
- Choose Full Details from the View menu.
- Move the mouse pointer to the right of Deadline: (or Earliest:) and click when the I-beam appears.
- Type the appropriate date.

Imposed Dates
Earliest:
Deadline:

Dates are entered in the form DAY (number), MONTH (first three letters) and YEAR (number) like this:

Or, like this:

15jun87

15-jun-87

You may edit a date in the usual *Macintosh* fashion.

Imposed dates may be applied to events in the same way.

Dates		Analysis results	
Earliest	: 22-Jun-87	Resource	Date 21-Jun-87
Deadline	:	Archives	
Achieved	:	Master	21-Jun-87
Sort Code	:	Interim	-

Note: Imposed dates do not guarantee that an activity or event will actually happen on the day specified, the reasons for which are explained in Chapter 4.

Overlapping Activities

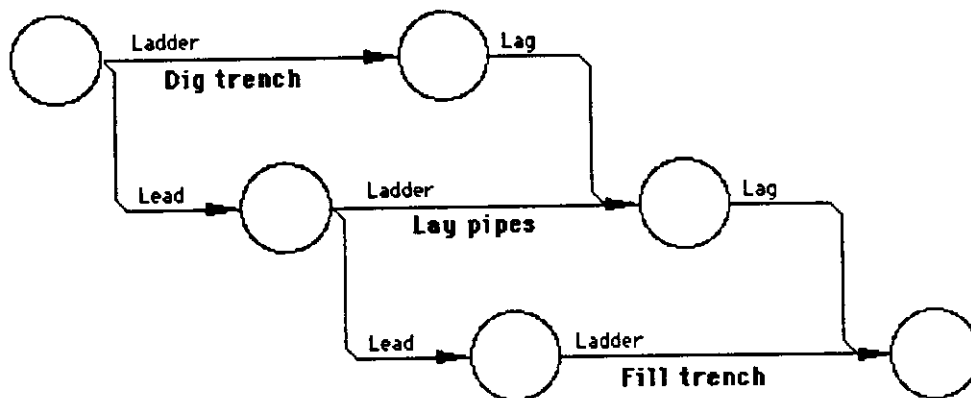
Sooner or later, you will encounter activities in the network which may be overlapped.

For example, imagine a project which involves laying pipes....



Instead of waiting for the complete trench to be dug, the pipe laying could start as soon as the trench excavation had reached a certain stage. The trench excavation, however, must complete before the pipe laying operation. Similarly, the filling in operation could start (but not finish!) before the pipe laying is completed.

These activities may be 'staggered' or overlapped by introducing a **Ladder** structure like this:

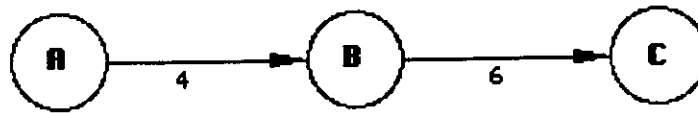


The overlapping operations form the *rungs* of the ladder and are referred to as **Ladder** activities - the **Lead** and **Lag** activities are special dummies with durations which specify the time interval between each overlap.

A Lead activity imposes a time lapse or *lead time* between the start of one Ladder activity and the next.

A Lag activity, on the other hand, means that there is a specific time delay between the completion of the one rung of the ladder and the next. The start of the following rung may even be delayed in order to maintain this *lag time*.

To construct a ladder structure you need to specify the overlapping activities as Ladder types and then link them via Lead and Lag activities.



For example, overlap activities A→B and B→C like this:

■ Open activity A→B.

■ Click to the right of Type:

All the types appear in a window.

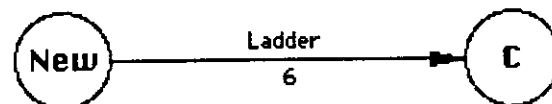
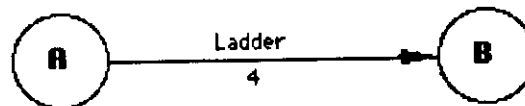
■ Select Ladder by clicking on it .

■ Click OK.

■ Similarly, centralize and open activity B→C and change the activity type to 'Ladder' then ...

■ ... move the mouse pointer into the left hand circle, and when the I-beam appears, select the existing event name.

Activity Type	
☐	Start flag
☐	Finish flag
☐	Dummy
☒	Ladder
☐	Lead
☐	Lag
☐	Non-Split
☐	Hammock
☐	Consecutive
☐	Normal



Either,

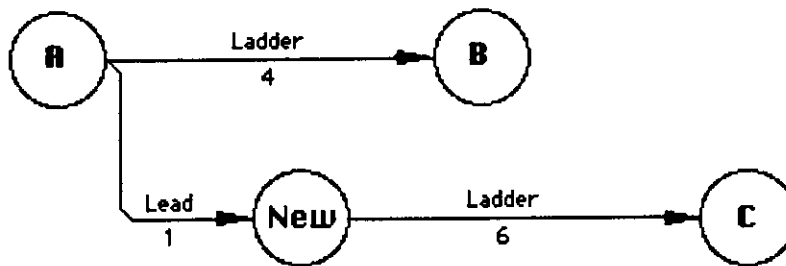
■ Type a name for the new event.

■ Click OK.

■ Click No as you do not want to keep the original activity.

Or, to invent the next unused event name,

■ Type '?'.



The two ladder activities are unlinked. Now, create a new activity to re-link the preceding event of one ladder to the preceding event of the other - the new event is already centralized so...

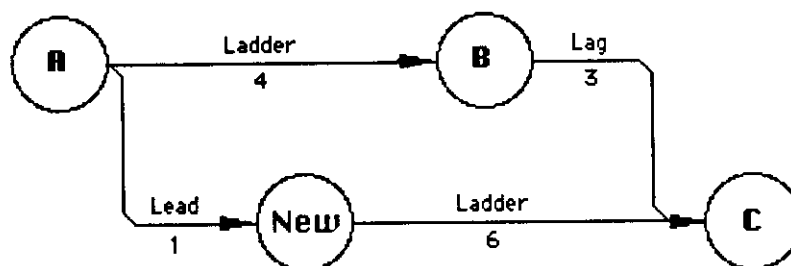
■ Click the new event and drag to the left then release the mouse button.

■ Type 'A' to rename the preceding event.

Let's suppose that activity NEW→C cannot start until 1 week after the start of activity A→B.

■ Enter a duration of 1 and, as previously described, change the activity type to 'Lead'.

■ Click OK.



Finally, imagine that activity NEW→C cannot complete until 3 weeks after the finish of activity A→B so create a Lag activity like this...

■ Centralize and click on event 'B' then drag to the right to create a new activity.

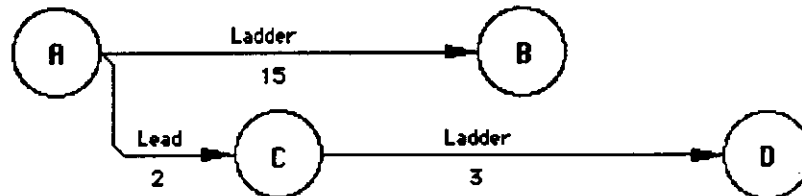
■ Type 'C' as the succeeding event name.

■ Enter a duration of 3 and change its type to 'Lag'.

It is not essential that every ladder structure includes both Lead and Lag activities.

Consider the following.....

Partial Ladders - Lead Only

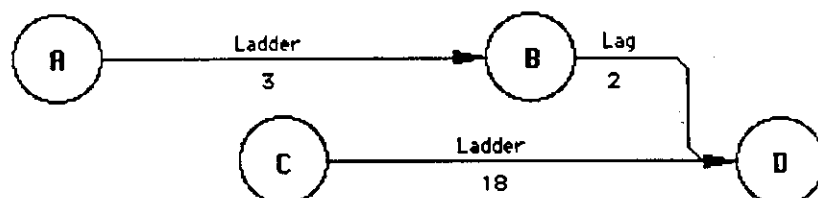


In this diagram, one activity leads into another but their completion is not connected. There is, therefore, no need to include a Lag activity in the ladder structure.

To link activities in this way:

■ Define A→B and C→D as 'Ladder' type activities and activity A→C as a 'Lead' type.

Partial Ladders - Lag Only



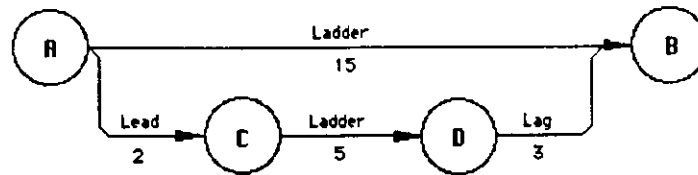
You may also wish to overlap two activities which may start independently of each other but one activity must finish a certain time ahead of the other.

In this case, a Lag activity is required but a corresponding lead is inappropriate.

■ Define A→B and C→D as 'Ladder' type activities and B→D as a 'Lag' type.

Note: Time Analysis may delay C→D in order to maintain the appropriate lag time.

Partial Ladders - Double Dependency



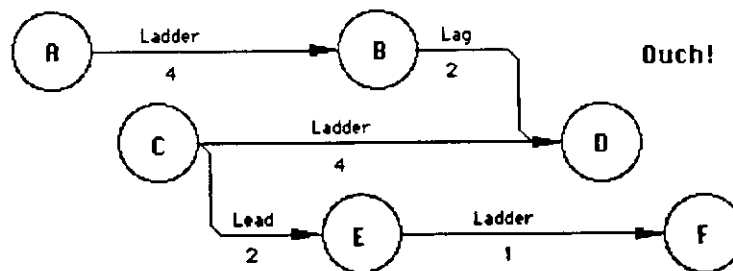
Under certain circumstances, two activities may need to overlap where the progression of the first activity dictates the start of the second but the progression of the second activity dictates the completion of the first. This structure allows you to express:

C→D can only start 2 days after the start of A→B and the progression of A→B always remains 2 days ahead of that for C→D. A→B, however, cannot finish until 3 days after C→D and, of course, that lag is progressive from the start of C→D.

Beware of a situation called the DEADLY EMBRACE! If the durations A→C→D→B are greater than the duration of A→B then Resource Analysis will never allow C→D and A→B to start.

■ Define activities A→B and C→D as 'Ladder' type, A→C as a 'Lead' type and D→B as a 'Lag' type.

Partial Ladders - Wider Implications



In the above structure, contrary to the usual laws of Time Analysis, Micro Planner causes E→F to be delayed directly by A→B. The lag B→D delays the completion of C→D and, because the lag works progressively all the way through a ladder structure, the start of C→D is also delayed. C→D, in turn, delays the lead C→E and therefore E→F. The dependencies are, of course, maintained during Resource Analysis.

Note: In the above structure, the event C is not delayed by the ladder structure, therefore, any normal activity leaving C will not be delayed.

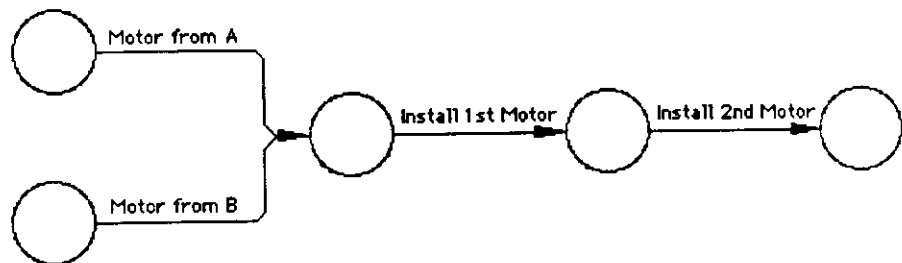
Reverse Logic

Having laid down the strict rule in the previous chapter - *an event cannot be achieved until all activities entering it have been completed* - here is the exception...

The Reverse Logic Event reverses the normal logic so that it is achieved when the **first, not the last**, activity entering it is complete.

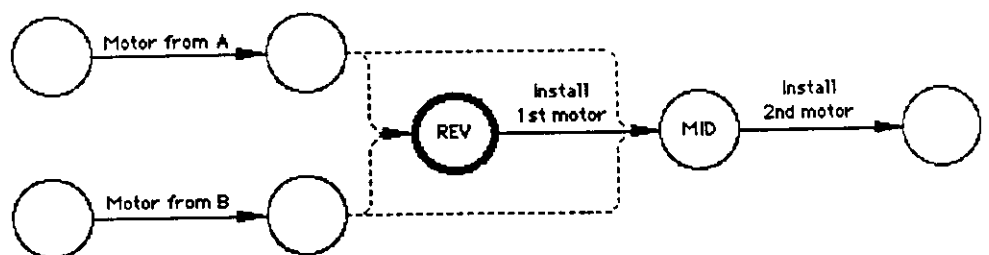
Take, for example, a project which involves the installation of two motors - these motors are interchangeable but obtained from different suppliers. You do not know, when constructing the model, which motor is going to arrive first so...

...using the usual network logic, the first motor could not be installed until **both** motors arrive.



In the following diagram, however, event REV is a Reverse Logic event. The first motor (irrespective of the supplier) may be installed immediately without waiting for the second motor to be delivered.

When the second motor arrives, it may be installed as soon as the installation of the first motor is complete.



Note: In the diagram, notice the use of dummies. The event MID is a normal event which means that the second motor can only be installed when *both* have arrived.

Reporting Facilities

To create a Reverse Logic Event:

- Centralize the required event and double click on it to open it.

As you open the event this window appears with all the possible event types:

- Click Reverse Logic then click OK.

Event Type
Begin Event
End Event
Key Event
Reverse Logic
Normal Event

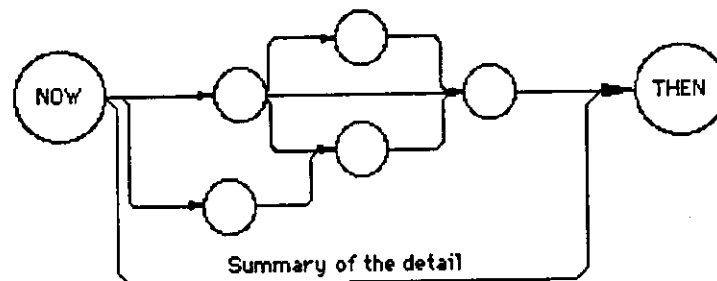
There are one or two facilities Micro Planner offers you to assist reporting on your schedules.

Top Level Reporting

When reporting to clients or to senior management it is often preferable to report succinctly on the key issues rather than to confuse the scene with full detail.

Micro Planner has two methods of dealing with this requirement:

a) Hammock Activities



In this diagram there is a lot of detail which could be abbreviated by a single activity starting at NOW and finishing at THEN. When the model is constructed, however, the duration between NOW and THEN is not known.

If you want to summarize part of the network in this way, then use the Hammock activity to span two specific events.

The Hammock activity calculates the duration between its start event and finish event for each schedule selected. In other words, you do not allocate a duration to a Hammock activity - it assigns its own.

If a number of hammocks are placed strategically through the network, they may be built into the model to present an abbreviated 'broad brush' report in Barchart or other form.

A Hammock activity can be entered like this:

- Add the activity in the usual way.
- Leave the duration at zero.
- Click to the right of Type:
- Click Hammock in the Activity Type window.

Activity Type
Start flag
Finish flag
Dummy
Ladder
Lead
Lag
Non-Split
Hammock
Consecutive
Normal

Note: As a hammock has no duration of its own it does not affect the timing of a project. By the same token, a hammock must not be used as the *sole* logic link between two events.

b) Key Events

Key (or Milestone) events offer a method of reporting exact achievement dates for particular occurrences. Whenever there is completion of an important operation or group of operations, the event at which they converge can be entered as a Key type.

These Key events may be listed on a special type of report as discussed in Chapter 5.

Enter a Key event like this:

- Centralize the required event and double click on it to open it.

The event type window appears:

- Click the Key Event type.
- Click OK.

Event Type
Begin Event
End Event
Key Event
Reverse Logic
Normal Event

You may have noticed that events, as well as activities, can receive Zone and Responsibility labels, Sort Codes and descriptions - now you know why. Key Events share the same reporting facilities as activities.

Flags

There are times when you may wish to flag specific key points on a barchart or other report. There are two types of activity which are designed to behave in a particular way to act as flags.

First let's examine what happens when an activity duration is zero:

This activity has a duration of 1 day which means it starts on the 4th of January and it also finishes on the 4th January.

January							
1	2	3	4	5	6	7	8

This second activity, however, has a duration of zero. This means that it actually happens at midnight.

January							
1	2	3	4	5	6	7	8
				◀			

If this activity is a flag it can, therefore, be used to signal...

either, something finishes on the 4th of January

or, something starts on the 5th of January.

A flag activity has to have zero duration to avoid interfering with the project timings.

January							
1	2	3	4	5	6	7	8
Phase 1							
				Phase 2			

In this example, the flag is sandwiched between phase 1 and phase 2.

If you want to signal the 'Completion of Phase 1' then use a Finish flag which has only a finish date of 4th January.

If, however, you want the flag to say 'Start of Phase 2' then you need a Start flag showing only a start date of 5th January.

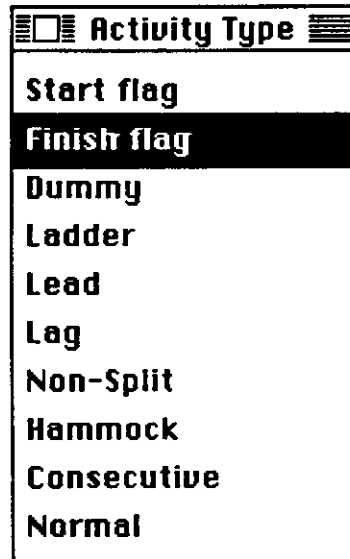
At first glance, the dates may appear to be in the wrong order - in the last example, the flag activity finishes on the 4th but starts on the 5th!

This is because the flag is reporting the date for the activities around it.

To create a flag activity:

- Add the activity in the usual way.
- Click to the right of Type:

The Activity Type window appears.



Now! If you want your flag to mean 'Start of' then:

- Click the Start flag type.

Otherwise, if you mean 'Finish of' then:

- Click the Finish flag type.

Note: Start and Finish activities only perform if their duration is zero.

Do not confuse Start and Finish flags with Begin or End events, they are not associated nor do the flags have anything to do with the beginning of logic or end of logic.





3

Adding
Resources

3

Adding Resources

Why Resources?

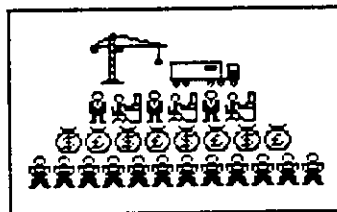
When you analyze a project on timing alone, the results show when the project can complete and what the deadlines are for each operation.

What analysis of time does not tell you, however, is whether there are enough people to meet this schedule or whether the available machines can cope or how much cash you need.

Time Analysis calculates when each operation *could* happen but to find out when each operation *should* happen, you need to consider Resources.

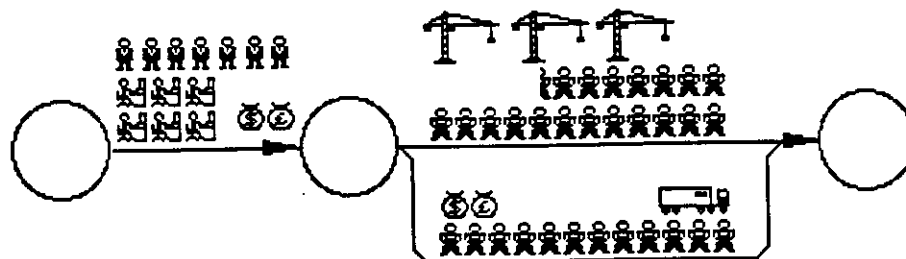
To analyze resources Micro Planner requires a little more information from you. This information falls into two categories:

Resources available



and

Resources used



First, let's examine how to enter the resources...

Resources Available

In this section you find how to enter the resources which the project can utilize.

View

Project Details...

Network
Full Details %F
 Resources Used... %B

Resources Available...

Reduce to fit

Garchart...
Histogram...

Resources Available	
A	N
B	O
C	P
D	Q
E	R
F	S
G	T
H	U
I	V
J	W
K	X
L	Y
M	Z

OK

Resource Operatives					
Name: Operatives			Type: Normal		
Value: 300					
No	Date	Quantity	No	Date	Quantity
1	15-Jun-87	3	11		
2	29-Jun-87	6	12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

OK Remove Cancel

Micro Planner requires basic information about each resource and the quantities available to the project at any time.

To enter this information:

- **Choose Resources Available from the View menu.**

This window appears with cells A...Z available for resource names.

- **Click in an empty cell to insert a new resource.**

Resources Available	
A	N
B	O
C	P
D	Q
E	R
F	S
G	T
H	U
I	V
J	W
K	X
L	Y
M	Z

OK

Resource Untitled					
Name: Untitled			Type: Normal		
Value: 1					
No	Date	Quantity	No	Date	Quantity
1			11		
2			12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

OK Remover Cancel

You now have a blank window to record the details of the resource as follows...

Name

When you arrive in this window the resource name is preset to 'Untitled'.

If the name is not already highlighted:

- **Move the mouse pointer to the right of Name: and, when the I-beam appears, double click on Untitled to select it.**

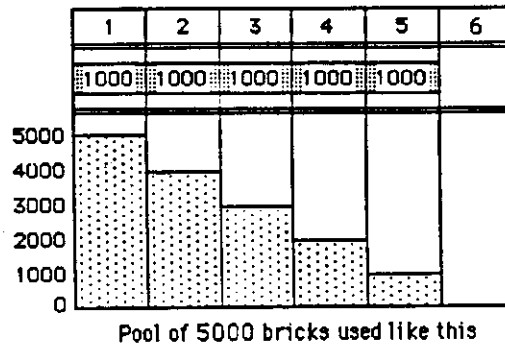
To enter the name:

- **Type the appropriate name for this resource.**

The name can not be longer than 12 characters. It may be edited in the usual *Macintosh* fashion.

Type

Micro Planner can handle two types of resource - Normal and Pool.



Normal resources are those which are available for work each day (like people) whereas **Pool** resources are actually consumed.

An example of a Pool resource could be bricks - if 1,000 bricks are laid today then there are 1,000 less available tomorrow.

The resource type is preset to Normal - if you want to change this:

- Move the mouse pointer over the Type: area and click.

The resource type switches to Pool.

- If necessary, click again to switch back to Normal.

Value

Micro Planner presets a value of 1 (of any currency) as the cost per day of this resource.

If you intend to use Micro Planner's costing features in your project, then enter the correct unit cost as follows:

- Position the mouse pointer on 1 just to the right of Value: and double click to select it.

- Type the new value as a whole number.

Name: Draughtsmen
Value: 375|

In the above example, a value of 375 means that one draughtsman costs 375 (pounds, dollars etc.) per day.

This value can be changed at any time by the usual editing processes.

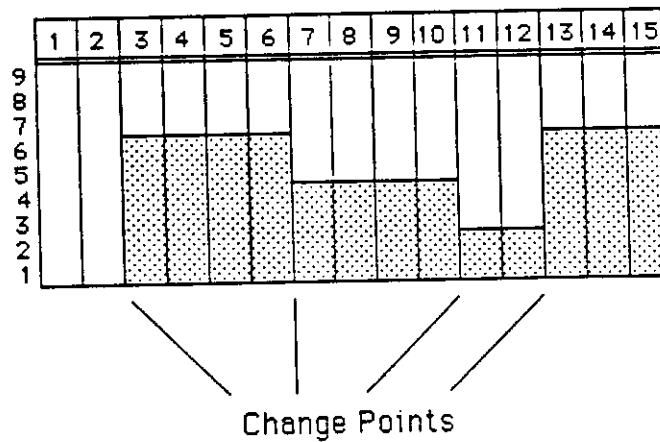
Note: Cash can be a resource. For example, you may wish to express fixed costs or other cash values in your costing exercise. In that case, you could call a resource 'Fixed costs' or something similar and leave the value as 1.

Change Points

Now, having recorded the resource's name and particulars, Micro Planner needs to establish the availability of the resource. The availability may, of course, vary throughout the project. This information is stored as a series of 'Change Points'.

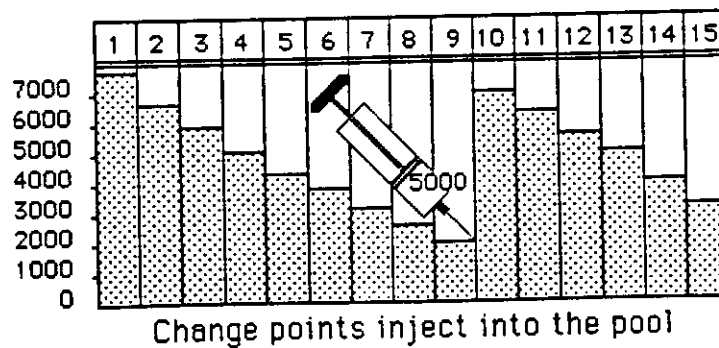
A Change Point is - what it says - a point at which the availability changes. You specify a date and the quantity available after that date.

The first change point is the date at which it changes from zero and, for normal resources, the availability is assumed to be constant between one change point and the next.



With a pool resource, however, the quantity specified at each change point means *inject this quantity into the pool*.

For example, if there are 2,000 bricks in the pool at the end of today and tomorrow's change point says 5,000 then there will be 7,000 bricks available tomorrow.



You are able to specify 20 change points and this is how:

■ Click in the first Date cell.

Micro Planner assumes the date to be Time Now. If you want to change this:

Either,

■ Double click in the date box then retype the entire date.

Or,

■ Click and drag over a portion of the date to be edited.

Enter the date as the DAY (number), MONTH (first three letters) and YEAR (number) like this:

15jun87

Note: The Edit menu is available if you want to Cut, Copy, Paste or Clear when modifying change points

Having entered the date, you can now specify the quantity.

Under normal circumstances, you would allocate whole numbers of resources.

There may be times, however, when fractional resources are available. In those circumstances, you can specify one or two places of decimals.

■ Click in the first Quantity cell.

No.	Date	Quantity
1	15-Jun-87	3
2		

If the quantity differs from the preselected value of 1.00, then change it like this...

Either,

■ Double click to select the entire cell and retype the new quantity.

Or,

■ Click and select that part of the quantity to be edited.

Notes: More than two decimal places are ignored.

If the resource is a Pool type, the quantity is prefixed by a '+' signifying its *addition* to the pool. If, however, you want to *subtract* from the pool, then change the quantity to a negative number.

The quantity entered can contain 7 significant figures or 6 if negative.

This means that without decimal places the range is:

-999999 to 9999999.

Or, with 2 decimal places, the range is:

-9999.99 to 99999.99.

Alteration to change points is possible at any time. If such an alteration changes the chronological order (like changing the date of an existing change point or adding a new change point) then the change points are immediately re-sorted.

If you need to remove a change point:

■ Click in the number field to the left of the appropriate date.

The whole change point is highlighted.

■ Click the Remove button.

Resource Operatives					
Name: Operatives			Type: Normal		
Value: 300					
No	Date	Quantity	No	Date	Quantity
1	15-Jan-87	23	11		
2	29-Jun-87	6	12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

OK Remove Cancel

The change point disappears and the others close ranks.

If you do not want to keep changes that you have just made then click the Cancel button, otherwise

■ Click OK to return to the Available Resources window.

■ Click OK to return to the network model.

Changing Resource Availability

You have now given the program all the data it needs about this resource. If, at a future date, you need to change the information then:

■ **Choose Resources Available from the View menu.**

■ **Select the required resource from the Available Resources window.**

The window for that resource is displayed and you are free to edit any information.

Deleting a Resource

If you want to remove a resource from the project altogether...

■ **Choose Resources Available from the View menu.**

■ **Select the required resource from the Available Resources window.**

Resource Operatives					
Name: Operatives			Type: Normal		
Value: 300					
No	Date	Quantity	No	Date	Quantity
1	15-Jun-87	3	11		
2	29-Jun-87	6	12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

OK Remove Cancel

■ **Click on Name: .**

The entire row is highlighted.

■ **Click the Remove button.**

The program seeks confirmation that you want to remove this resource.

If you decide not to proceed then:

■ **Click No.**

Otherwise, to remove the resource:

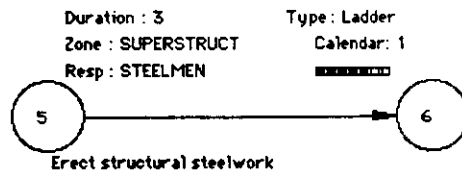
■ **Click Yes.**

You are returned to Resources Available window but the cell for this particular resource category is now empty.

Note: Check that there are no activities which still require this resource otherwise problems will arise during Resource Analysis.

Resources Used

This section examines how to assign resources to the activities in your project.



View

- Project Details...
- Network
- Full Details %F
- Resources Used... %R**
- Resources Available...
- Reduce to fit
- Barchart...
- Histogram...

Resource Usage					
Activity 5 —————> 6		Duration : 3		Cost : 16200.00	
No.	Resource	Start	Finish	Quantity	Usage
1	Operatives	0	3	6	Per Day
2					
3					
4					
5					

Resource Usage					
Activity 5 —————> 6		Duration : 3		Cost : 16200.00	
No.	Resource	A	N	Usage	
1	Operatives	C	P	Per Day	
2		D Draughtsmen	Q		
3		E	R		
4		F	S Steelmen		
5		G	T		
		H	U		
		I	V		
		J	W		
		K	X		
		L Operatives	Y		
		M	Z		

Cancel

Resource Usage					
Activity 5 —————> 6		Duration : 3		Cost : 556.00	
No.	Resource	Start	Finish	Quantity	Usage
1	Operatives	0	3	3.00	Per Day
2	Steelmen	0	3	16.00	Total
3					
4					
5					

Before you can utilize a resource, its details must have been entered as described in the previous section. Each activity is able to employ resources in a flexible manner.

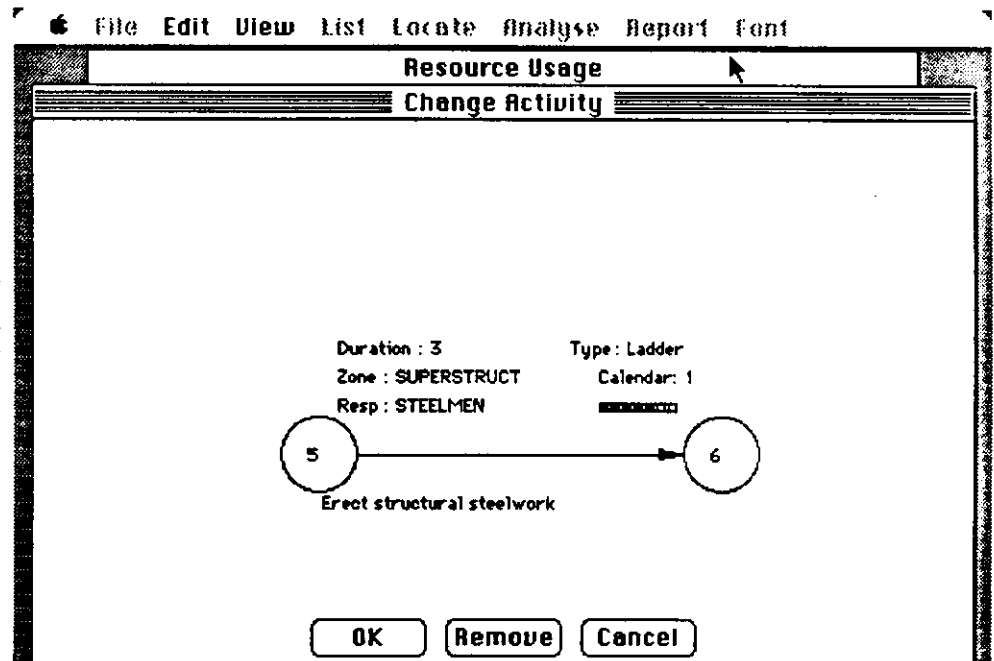
To enter resource usage on an activity:

- Double click on a centralized activity to open it.

Either,

- Choose Resources Used from the View menu.

Or, notice that the Resource Usage window is peeping out from under the Change Activity window like this:



- Click on the visible portion of the Resource Usage window to bring it to the foreground.

If you find that the Resource Usage window now obscures the information on the Full Details panel, you may move it like this....

- Click on the Resource Usage window header bar and, while keeping the mouse button pressed, drag an outline of the window to a more convenient position.

Resource Usage					
Activity				Duration :	Cost :
5		6		3	0.00
No.	Resource	Start	Finish	Quantity	Usage
1					
2					
3					
4					
5					

The Resource Usage window accepts a maximum of 20 resources employed on this activity. There are five visible columns and five visible rows of cells - let's look at the first:

Resource

First, you specify which resource:

- Click In the first Resource cell.

The Available Resources menu appears.

- Click on the resource you want.

Micro Planner now returns to the Resource Usage window and assigns one of this resource category to the whole of the activity's duration. You may now change the cells which are not appropriate.

Resources Available	
A	N
B	O
C	P
D Draughtsmen	Q
E	R
F	S Steelmen
G	T
H	U
I	V
J	W
K	X
L Operatives	Y
M	Z

Cancel

Resource Usage					
Activity				Duration :	Cost :
5		6		3	4500.00
No.	Resource	Start	Finish	Quantity	Usage
1	Steelmen	0	3	1.00	Per Day
2					
3					
4					
5					

Note: You may use the Cut, Copy, Paste and Clear commands on the Edit menu when changing or editing the contents of these cells.

Start and Finish

The Start and Finish cells are preset to employ the resource throughout the activity.

It is possible, however, to specify a resource requirement for a portion of the activity by entering the *start* and *finish* times relative to the activity's duration.

For example, if the activity has a duration of 3 weeks and the resource is required for the middle week only, then the *start* would be 1,0 and *finish* would be 2,0.

This is why you have the two columns headed Start and Finish - do not confuse them with the *actual dates* on which the activity is going to start or finish.

Start

This cell is preset to zero. If you do not want the resource assigned to the immediate start of this activity then do this:

- Double click in the Start cell.
- Type the amount of duration to be skipped before using this resource.

Finish

This cell is preset to mean *this resource is employed up to the end of the activity*. If that is not the intention then:

- Double click in the Finish cell.
- Type the elapsed duration (from start of the activity) at which the resource 'switches off'.

Enter the *start* and *finish* times as if you were entering a duration - type weeks and days separated by a comma.

Resource Usage					
Activity		5	6	Duration : 3	Cost : 27000.00
No.	Resource	Start	Finish	Quantity	Usage
1	Steelmen	0	2,2	6.00	Per Day
2					
3					
4					
5					

Usage

I have skipped the quantity column to have a look at this one first.

Before you enter a quantity, decide whether you want to specify how many resources are required each day or whether you are entering the total number of man-days (or machine days, bricks, cash etc.) for the entire duration.

The preset value is Per Day which means the quantity you enter is required every day. If that is not the case then:

■ Click in the Usage cell.

This toggles from 'Per Day' to 'Total'.

■ Click in the Usage cell again to replace Per Day if necessary.

Notes: If you select Total constant resources, Micro Planner subtracts the Start from the Finish days, divides the quantity by actual period required and employs the resultant number of resources (up to 2 decimal places) per day.

Hammock activities do not accept Total constant resources.

Quantity

Finally, you should enter the required quantity of this resource. If the quantity differs from the preset value of 1 then...

Either,

■ Double click in the Quantity column and re-type the required number.

Or,

■ Click and select that part of the quantity to be edited.

You can specify the quantity using two decimal places - for example, if one person can be spread over a number of operations or a machine can handle a number of operations at once.

Note: If you enter more than two places of decimals, the extra decimal places are ignored.

With Pool resources, you may enter a negative usage which means add these resources to the pool.

Imagine, for example, an activity 'Delivery of Bricks' where you 'lay' -10,000 bricks on the last day of the activity and another activity 'Progress payment' where you 'spend' -100,000 cash.

Activity : 52		64		Duration : 3	Cost : 0.00
No.	Resource	Start	Finish	Quantity	Usage
1	Bricks	2,4	3	-10000	Per Day

The first would add 10,000 bricks to the pool, the second would inject 100,000 in cash to our cash flow!

The quantity entered can contain 7 significant figures or 6 if negative. This means, without decimal places the range is:

-999999 to 9999999.

With 2 decimal places the range is:

-9999.99 to 99999.99.

Cost Display

The display in the top right corner of the Resource Usage window is designed to tell how much this particular activity costs. As you add resources, this display gives you a tally of the total cost contribution this activity makes to your project.

Resource Usage			
6		Duration : 3	Cost : 27000.00
	Finish	Quantity	Usage
0	2,2	6.00	Per Day

The display is the result of multiplying the usage by the value you input for each resource.

Note: The cost is correctly displayed only when an entry has been completed. Thus if you wish to be sure of the cost figure simply click beside the cost figure and this causes any partially entered information to be accepted.

Additional Slots

The Resource Usage window appears with 5 visible rows (or slots). You may, however, add a maximum of 20 resource entries per activity by using the vertical scroll bar to reveal additional slots:

- Click the down arrow or move the thumb to expose more slots - up to 20.

Resource Usage					
Activity		5	6	Duration : 3	Cost : 68445.00
No.	Resource	Start	Finish	Quantity	Usage
10	Operatives	0	3	3.00	Per Day
11	Steelmen	0	2,2	6.00	Per Day
12					
13					
14					

Note: The same resource category may be placed in more than one slot - for example, when specifying a different usage pattern or quantity.

Leaving Resource Usage

Once you have entered all of the resources used by this activity then:

- Click anywhere in the Activity window to hide the Resource Usage window.

- Click the OK button.

You are returned to the network model and the resource usage for this activity is accepted.

Changing Resource Entries

If, at a future date, you need to change the resource usage:

- Centralize and open the activity in the usual way.

Either,

- Choose Resources Used from the View menu.

Or,

- Click on the visible portion of the Resource Usage window.

■ **Select the relevant cell and edit as required.**

You have access to the Edit Menu to Cut, Copy, Paste or Clear commands.

Removal of Resource Entries

To remove a resource usage entry....

■ **Open the centralized activity.**

Either,

■ **Choose Resources Used from the View menu.**

Or,

■ **Click on the visible portion of the Resource Usage window.**

■ **Click in the number field to the left of the appropriate Resource cell.**

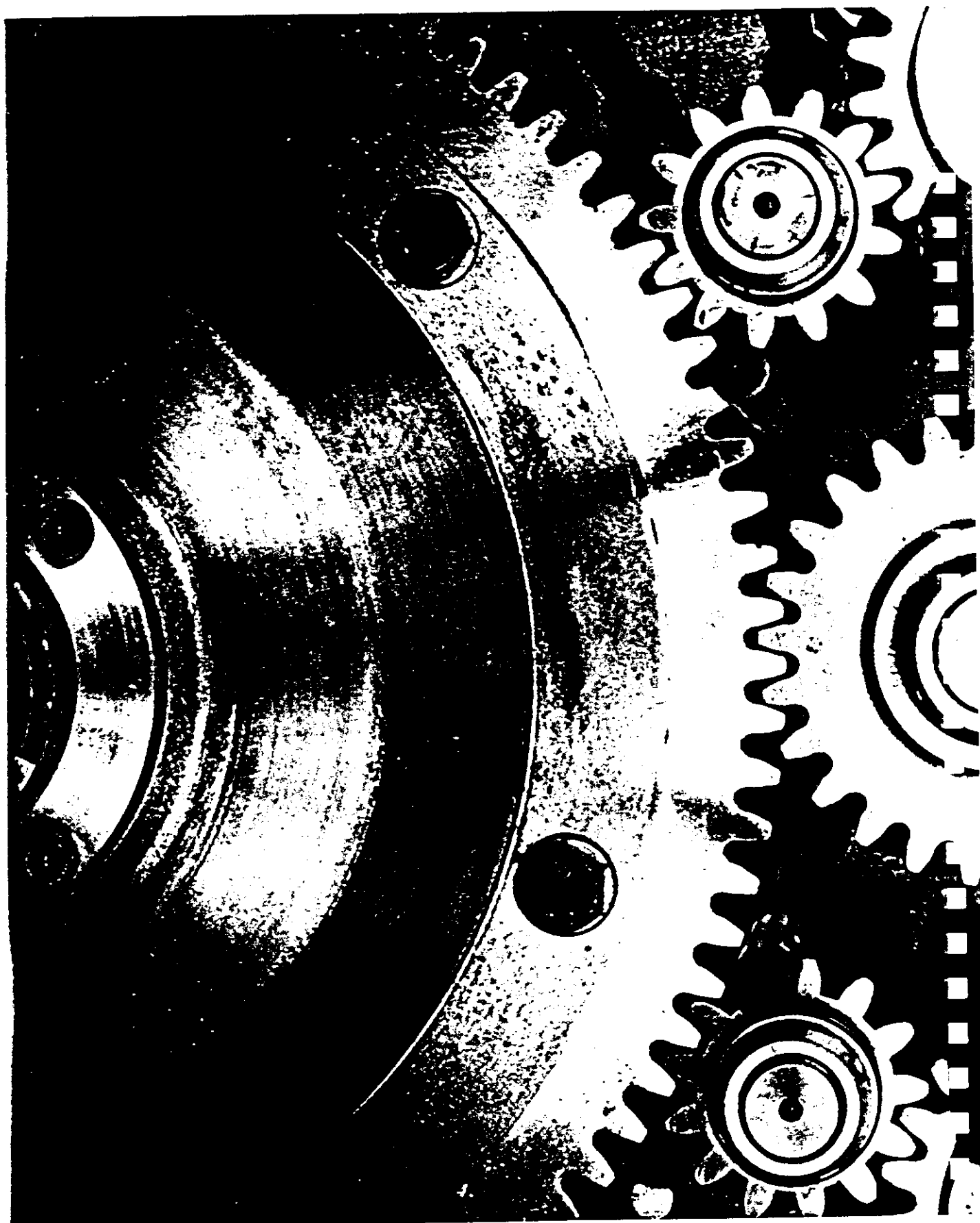
Resource Usage					
Activity		5	→	6	Duration : 3 Cost : 12645.00
No.	Resource	Start	Finish	Quantity	Usage
1	Steelmen	1	2,2	6.00	Per Day
2	Operatives	0	3	3.00	Per Day
3					
4					
5					

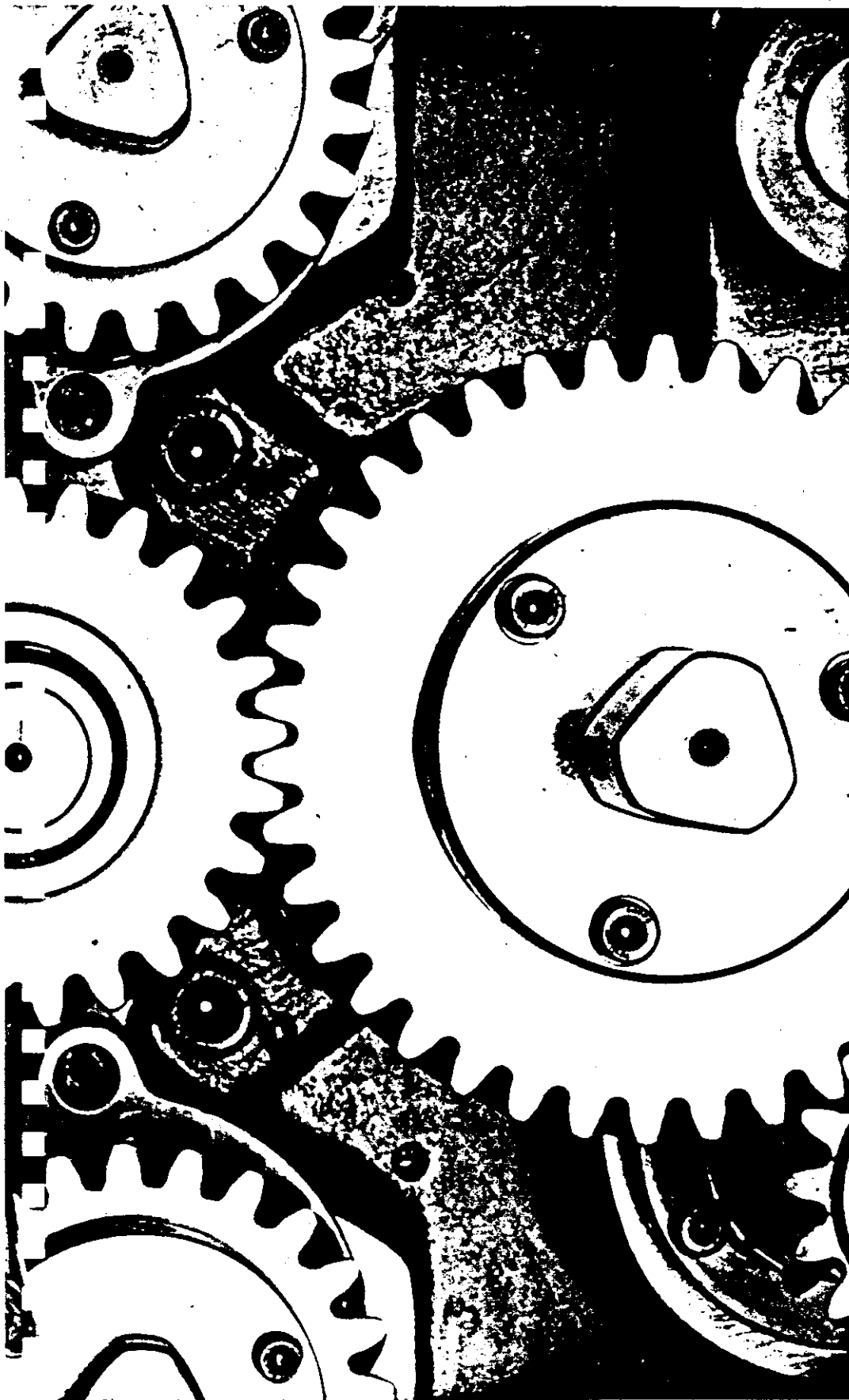
The whole Resource Usage line is highlighted.

■ **Choose Clear from the Edit menu.**

The entry disappears and the others close ranks.

Edit	
Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘U
Clear	
Select All	⌘A





4

Project Analysis

Project Analysis

In this chapter we examine the various ways in which you can process your project, view the results and store them.

Time Analysis and Resource Analysis are discussed separately but they are, of course, interconnected. You may also archive particular analysis results as explained at the end of this chapter.

This is the first process to which your project model must be subjected. It is the process by which Micro Planner figures out how early each activity may start and what is its deadline.

[illegible]

84

If C takes 2 days then D can start after 5.

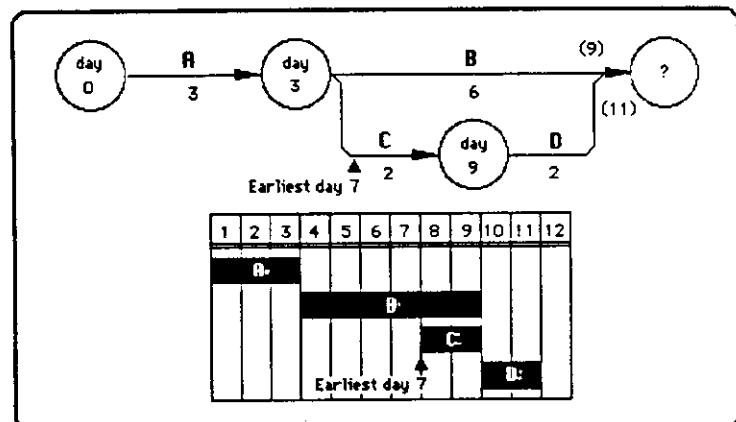
So when does the project complete if D takes 2 days and B takes 6 days?

If you examine the Rules of Logic which were etched into your mind in Chapter 1 then the answer must be 9 - giving activity B time to complete.

That's the theory - in practice, however, Micro Planner may have to consider additional factors like different calendars or imposed dates.

For instance, if C worked to a 5 day week and finished on Wednesday and if D could only work at weekends then D would not be able to start until the following Saturday.

For the moment, don't worry too much about the implications of multiple calendars as these are discussed in the next section but notice this example:



What happens if you put an earliest date (7) on activity C? The activity can only start after 7 and, therefore, activity D is prevented from starting until after 9.

So when does the project finish? - you've got it, 11 (completion is now dependent on activity D).

I could fill a book with these examples but I hope you are getting the idea.

Latest Dates (or Backward Pass)

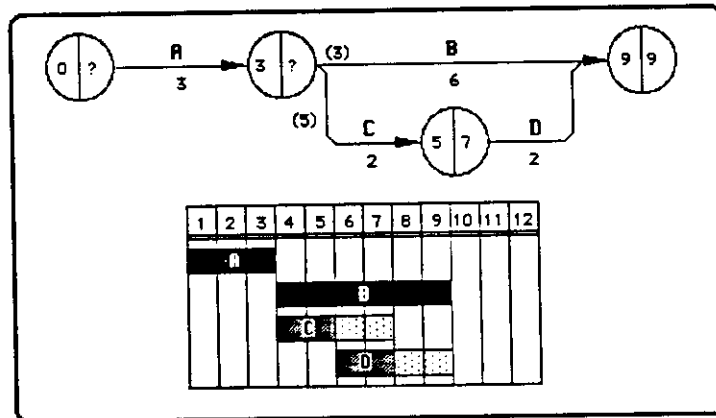
In the last section we figured out the earliest dates on which each activity could start and finish. But these are only half the story.

We also need to know how late each activity can be before it delays the completion of the project - its deadline.

When Time Analysis gets to an End Event it does two things:

First it takes the earliest achievement date for this event and makes it into a deadline. If you have put an earlier deadline on the event, it adjusts to this instead.

Then it turns around and goes backwards but, this time, subtracting durations from the deadline.



Returning to the example, if D's duration is subtracted from 9 you get 7. That means D could start as late as 7 without delaying the project and C could finish as late as 7.

If you subtract the duration of C from 7 you get 5.

Now, if B's duration is subtracted from 9 you get 3. So how late can A complete before delaying the project?

The answer is 3 because, if it were any later, B could not complete by 9.

Float

In the previous example, we saw that the earliest and latest start dates for activities C and D differ by 2 days while those for activities A and B are the same.

This means that activities C and D may be delayed by 2 days before delaying the project. This margin of spare time is referred to as **float**.

Note: If C is delayed by 1 or 2 days then D has to be delayed as well - C and D both share the same 2 days float!

If, however, activities A or B are delayed then the project is delayed. These activities have zero float and are referred to as **critical activities**.

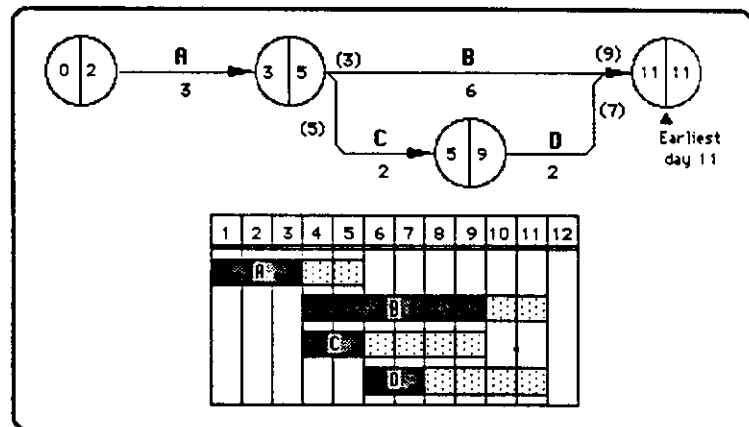
The sequence of such activities (or, in other words, the longest chain of activities through the network) is called the **Critical Path**.

When, as mentioned earlier, Micro Planner meets an end event it assumes that the earliest date for this event is the deadline.

If you do, in practice, have more time to spare then do this:

■ **Place an EARLIEST date on the END event!**

With our example, it would work like this:



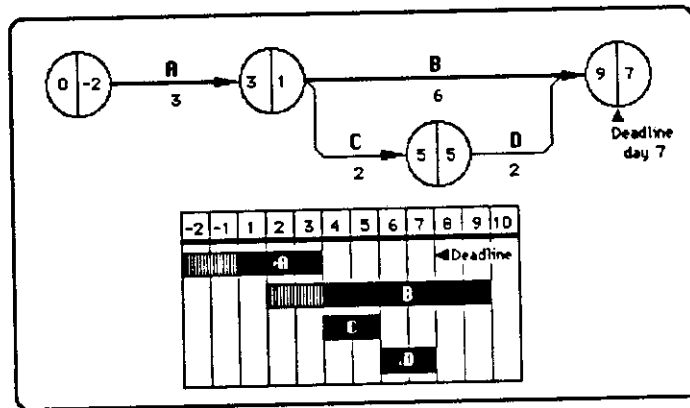
During the forward pass, B finishes at 9 (2 days after D) so the end event can be achieved at 9. There is an earliest date on the event which is later than day 9 therefore the event is delayed to 11.

As a result, when the backward pass starts, it commences from 11 thus giving *every* activity some spare time.

You will see the importance of float when you start looking at Resource Analysis.

Deadlines

Deadline dates can be applied to any activity or event like this:



In this example there is a deadline of 7 on the end event. It cannot force the activities to take any less time but it does re-calculate the latest dates on the backward pass - this little model is saying that *to finish by your deadline, you should have started 2 days ago*.

Note: The path A→C→D can meet the deadline. It is the path A→B which takes 2 days too long - Micro Planner calls it a **Supercritical Path**.

A simple analogy, perhaps, is the effect of the right hand margin on a line of text...

... the right hand margin cannot *force* the text to fit on single line if the text itself is more than one line long. If, however, the text is less than one line long then the margin will have no effect. For example, if the deadline in this model had been day 9 or later then a supercritical path would not have occurred.

Note: Imposed dates may override the normal Time Analysis figures but in one direction only! Earliest dates only work on the forward pass and deadlines only take effect on the backward pass.

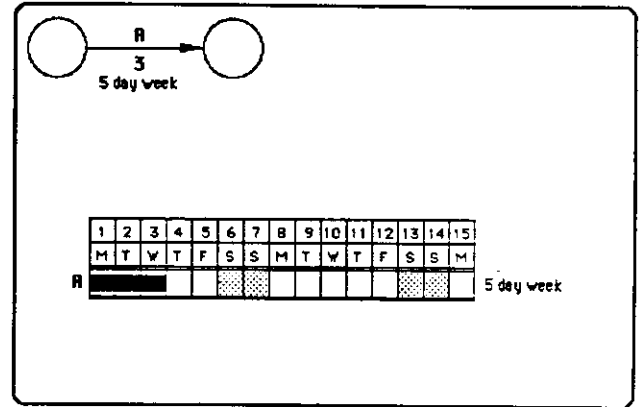
Ladders during Time Analysis

Ladder structures are explained in Chapter 2 in the section headed *Overlapping Activities*. Time Analysis takes into account the dating requirements imposed by leads and lags.

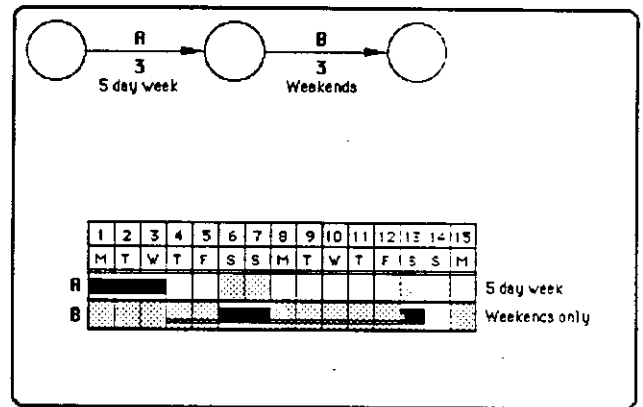
Multiple Calendars

The effects of multiple calendars can be a little complicated. I shall therefore confine this section to a simple example of what can happen.

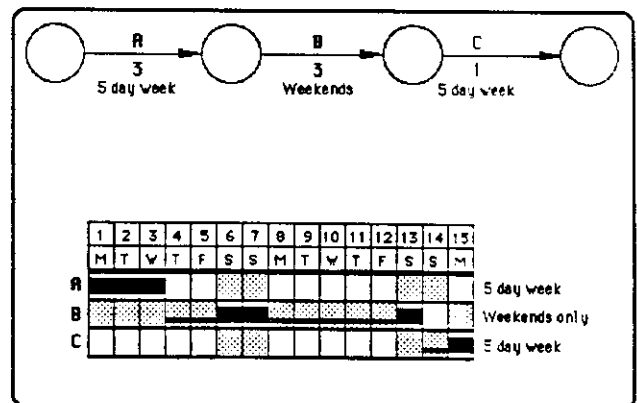
In this example, A works to a 5 day week, takes 3 days and finishes on a Wednesday.



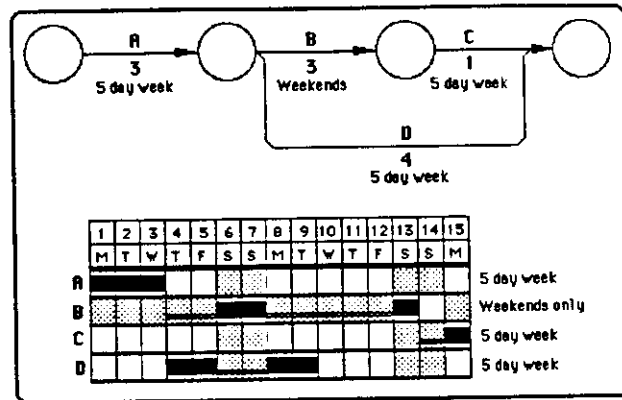
Activity, B, however, is confined to a weekend calendar which means that it cannot start as soon as A finishes but must wait for the following Saturday before it can start. This activity takes 3 days (1 week and 1 day of weekends) so it is not going to finish until the following Saturday.



Once B is complete, C is free to start - as soon as the weekend is over.



Activity D starts at the same event as B but, unlike B, is on a 5 day week. This means that D may start on Thursday without delay.



Note: Multiple calendars can use float with interesting effect. Looking at our model, activity C is critical and this may lead you into thinking that $A \rightarrow B \rightarrow C$ and $A \rightarrow D$ are *critical paths*.

However! B can finish 1 day later (on Sunday) without delaying the project and, therefore, it is not *critical*. Similarly, A can finish 2 days later (on Friday) and D, of course, has plenty of float.

In other words, there is no critical path in this example - only the critical activity C.

Notes: For the purposes of simplification, the timing in all of these examples has been expressed in numbers - in practice, however, use dates instead of numbers.

For ladder structures, it is advisable to use the same calendar for the overlapping activities and their corresponding lead and lags.

If you are getting hooked on this stuff, there are books and training courses available to explain the technique of critical path analysis.

Actual Time Analysis

To run a Time Analysis:

■ Choose Time Analysis from the Analysis menu.

Once started, you can stop the analysis like this...

■ Click the Cancel button.

Time Analysis Displays

As Time Analysis gets under way, the following displays inform you of its progress:

- | | |
|---------------|---|
| LINKING | - the network is being linked together and checked for unconnected activities or dangles. |
| FORWARD PASS | - calculating the earliest dates. |
| BACKWARD PASS | - calculating the latest dates. |
| UPDATING | - the results are being entered into the network. |

Loops or Dangles

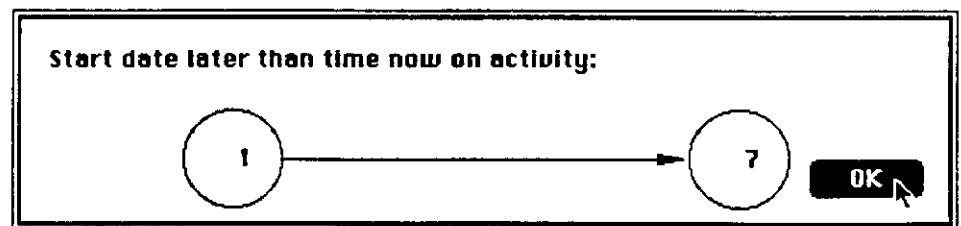
During Time Analysis, the network is checked for dangles or loops which are discussed in Chapter 1.

If any are found, error messages alert you to the problem and Time Analysis terminates.

Progress Errors

Micro Planner checks that the Started and Finished dates for each activity are in chronological order. Otherwise, if progress dates are inadvertently entered in the wrong order that would mean activities completing before they had started!

A check is also made in case any progress dates are later than Time Now.

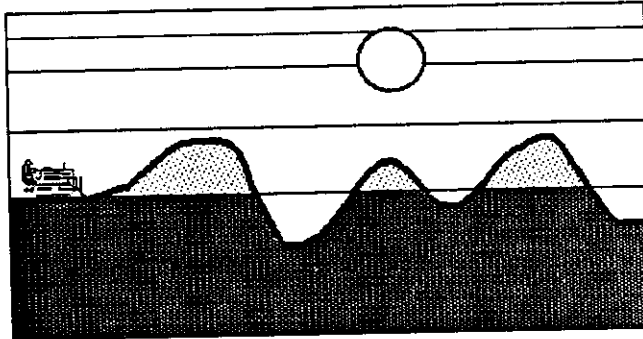


If progress errors are found they are reported and the Time Analysis process terminates, returning you to the model for corrections.

Resource Analysis

The Resource Analysis process may be best described as a bulldozer technique.

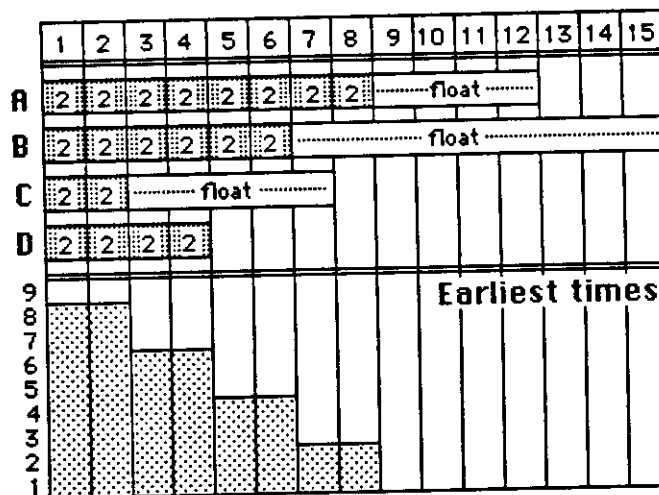
Imagine every activity on a project is able to happen at its earliest time - as calculated by Time Analysis. The result could be usage which fluctuates regardless of how many resources are available.



The availability of those resources can be set at a specific level - like the bulldozer blade. As the Resource Analysis bulldozer starts up and moves forward from Time Now, it pushes the *peaks* of excess resources into the *troughs* of unused resources.

There will be times when there is too much 'earth' for the required level to be reached. There may also be insufficient 'earth' to keep continuity at the required level.

That is the theory, in practice it works like this:

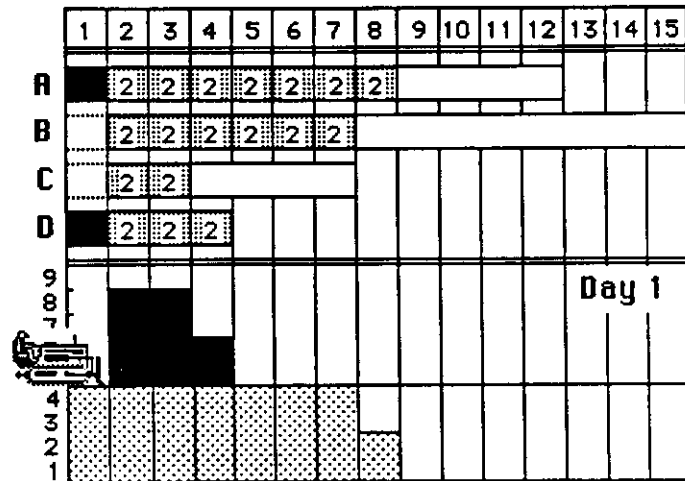


In this example, there are four activities all of which can start at day 1 and each uses 2 resources from start to finish. This picture shows what the resource usage would be if they all happened at their earliest dates.

Assume there are 4 resources available and you are going to do a Resource Analysis.

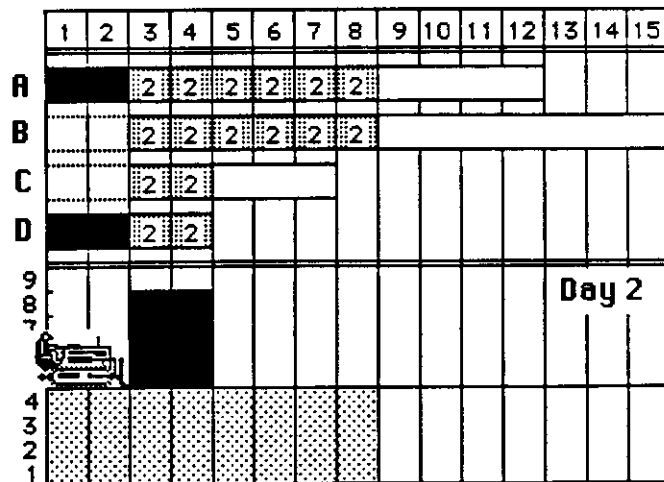
Day 1

There are only 4 resources so two activities must be delayed. Micro Planner looks at the amount of float (spare time) the activities have. B and C have more float than the other two, therefore, B and C are delayed while the resources are allocated to A and D. Day 1 finishes like this:



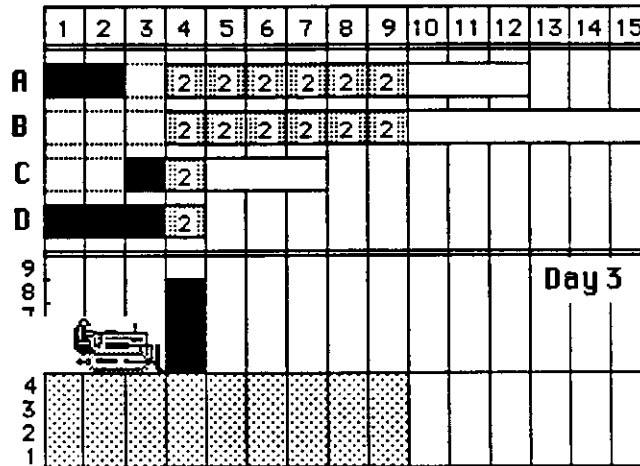
Day 2

Having been delayed, activity C has only 4 days float left - the same as A. Activity A, however, already has the resources and is allowed to keep them in preference to C. B and C are delayed once more, A and D get the resources and day 2 finishes like this:



Day 3

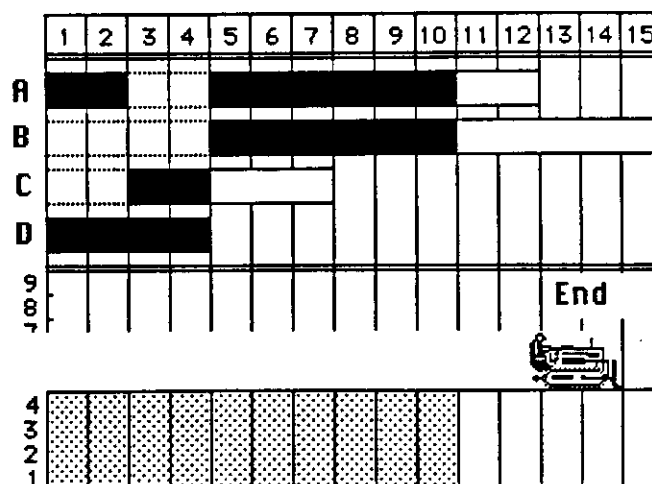
Now, because it has been delayed, C only has 3 days float left and is now more critical than A. Micro Planner now makes the decision to stop A (to split it) and to give the resources to C. So day 3 finishes like this:



You may avoid splitting of this kind by changing the activity type to Non-split or Consecutive as explained in the next section.

Day 4

At the start of day 4, both A and C have only 3 days float but C already has the resources so A and B are delayed while the resources are allocated to C and D. Activities C and D then complete so, after day 4, there is no further contest for resources. This means that activity A is re-started and A and B are allocated their resource needs without further delay.



Perfect solutions, however, may not be attained for a variety of reasons:

- a) It is highly improbable that there will be a steady supply of activities which use a resource in the correct quantities to fill the gaps.
- b) Our example has only one resource to worry about. In practice, there may be a number of resources all with differing availabilities. If there are enough resources of one type then the activity may still be delayed because it needs another resource which is not available.
- c) There are two different *grades* of float - free and shared. Activities which have free float may be delayed without affecting any other activity, whereas activities with shared float can only be delayed by similarly delaying following activities. Micro Planner takes all this into account and an activity with free float is delayed before one with shared float.

Remember you are also able to raise or lower the 'bulldozer blade' - by specifying change points.

Splitting

If you want to prevent Resource Analysis interrupting an activity once it has started, then change its type to Non-split type like this:

■ Centralize the activity and double click on it to open it.

■ Click on the Type: label.

■ Click Non-Split to select this type.

A Non-split activity may, however, be delayed before it starts. If you require the activity to continue without delay once its previous event has been achieved, then do this:

■ Click Consecutive type.

The Consecutive type also prevents splitting.

Activity Type
Start flag
Finish flag
Dummy
Ladder
Lead
Lag
Non-Split
Hammock
Consecutive
Normal

Note: There may be times when Micro Planner is forced to interrupt activities which are under restriction not to split as described in the section *Unavoidable Split/Overload*.

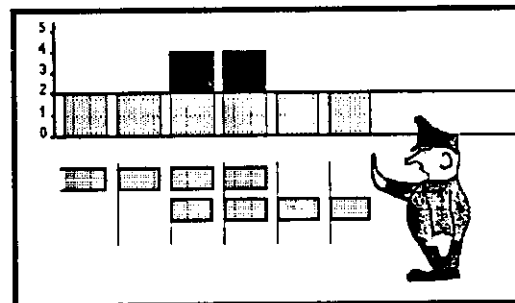
Time or Resource Critical

During Resource Analysis, Micro Planner may meet a situation in which there are insufficient resources available for an activity which has no more float. It is therefore faced with a decision - does it delay the activity so that the project completion or some other deadline is delayed, or does it overload the available resources?

Either,

If you must meet existing deadlines even though there may be insufficient resources to maintain this schedule then:

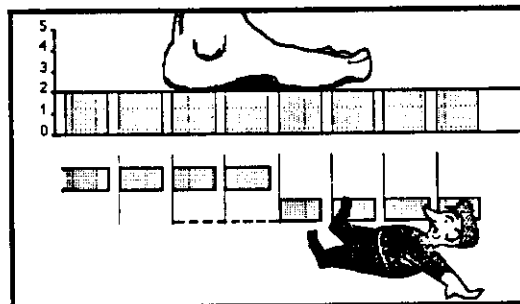
- Click on the Analysis menu and drag down past Resource Analysis... to ...Time Critical then release the mouse button.



Resource Analysis...Time Critical answers the question *how many resources do I need to finish on time?*

Or,

To answer the other question *How long do I need with the resources I've got?*, then carry out an analysis which delays beyond deadlines to avoid overloading resources...



- Choose Resource Analysis... ...Resource Critical.

Notes: Make sure that there are enough resources *eventually* available for every activity, otherwise sections of your project may be delayed *forever* and Resource Analysis finally falls off the end of the calendar.

If an activity uses 5 resources and only 4 are ever available then Micro Planner searches in vain for 5 and, therefore, fails to find a solution.

Do not drop resource levels to zero if it is possible for the user activity to be delayed beyond this 'zero point'.

Unavoidable Split/Overload

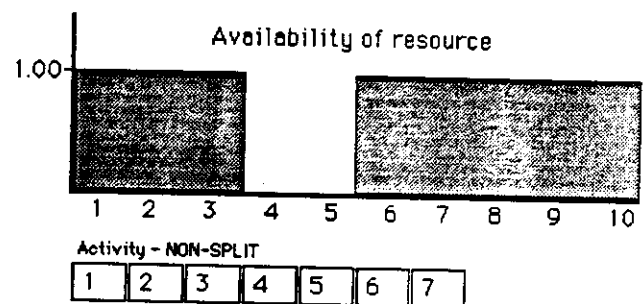
Now, by choosing Resource Critical you have already specified that the resources must not be overloaded and, under certain circumstances, the only way of achieving this may be the interruption of one or more activities...

... but what happens if these activities are Non-Split or Consecutive?

Micro Planner is faced with an impossible situation - it must either overload the resources or split activities when it has been instructed that it must do neither!

Let's see how such a dilemma can arise.

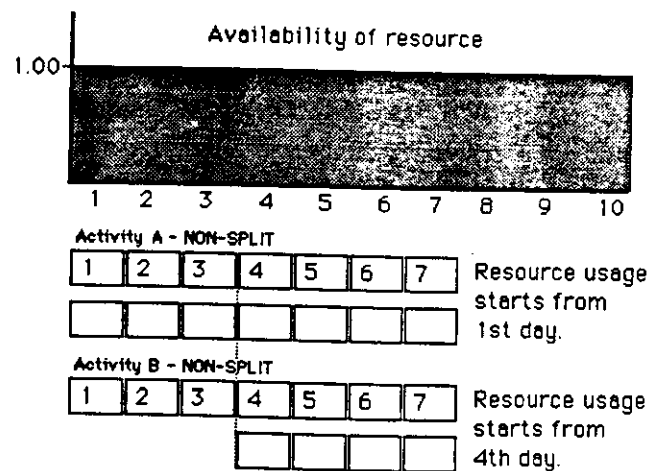
Imagine that there are enough resources for a non-split activity to start but, as the activity progresses, the resource availability drops to an insufficient level.



If this activity cannot be interrupted then the resources must be overloaded - but, if the resources cannot be overloaded then the activity must be split. Which is it to be?

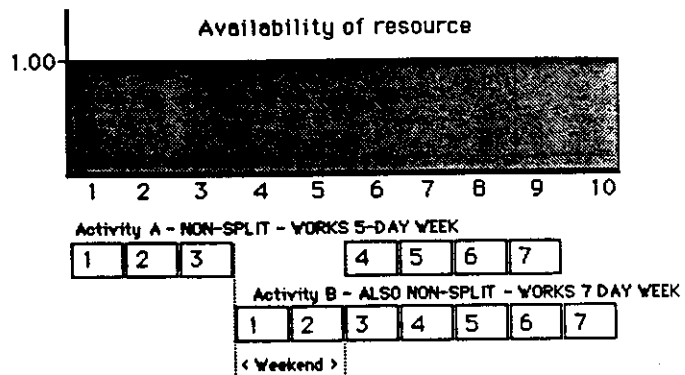
Another example would be two non-split activities which only start competing for the same resource once both activities are under way.

If activity B requires the resource for the latter part of its duration then both A and B would start but what happens when it is time for B to use the resource which A is still using?



Multiple calendars may also lead to a similar type of situation.

Activity B can start at the weekend when A is not being worked. On the following Monday, however, A and B must continue but the available resources cannot sustain both activities being worked at the same time.



When you select Resource Analysis...Resource Critical, this screen appears:

If you want to supervise the analysis and decide the course of action for each individual situation then:

■ Click the Prompt for Decision button.

What action do you want to take where overload is unavoidable ?

☒ Prompt for decision

☐ Overload resource(s)

☐ Split activity

Cancel OK

Otherwise, to make an overall decision:

■ Click the Overload or Split button as appropriate.

■ Click OK.

The Histogram File

Resource Analysis opens a 'Hist' file in which it stores results from which histogram displays are created.

If there is already a Hist file belonging to this project then the program updates it, otherwise it creates a new one.



If there is not enough room on the disk for the Hist file then an error message is displayed.

Resource Analysis Displays

Before Resource Analysis can be carried out, the data is read and sorted. A progress display appears on the screen and, during this process, you have the option to cancel.

When the actual analysis starts, you may stop it like this:

■ Click the **Cancel** button.

Otherwise, its progress is displayed as follows:

Resource Analysis	
Activities Released 33	Activities in Parallel 18
Current Time Period 17 -Jun -87	Current Status
Cancel	

Activities Released: The top left hand box displays the quantity of activities which have been 'dealt with' by the analysis.

Activities in Parallel: The top right hand box shows the quantity of activities currently standing in line for resource allocation plus those activities consequently being delayed.

Current Time Period: The lower left hand box displays the day being sliced at that moment - remember day 1, day 2 from a few pages back.

Current Status: When the message 'Splitting' appears in the lower right hand box it means an activity is being split at that time.

When the analysis is complete the message 'Updating...' appears in the box.

Hammock Activities during Resource Analysis

In Chapter 2 you were introduced to Hammock activities. Those are the ones you can enter for management reporting. They stretch themselves from their start to their end event and calculate their own durations.

They are also available for resourcing and costing overhead items. For example, if a hammock spanned over a period when a crane is required on your project then the longer you need the crane the more cost is allocated to your project.

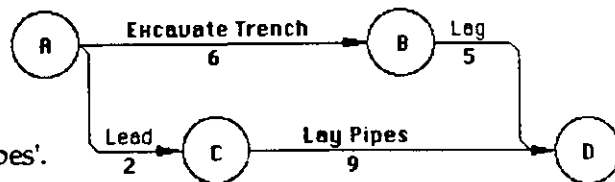
During Resource Analysis, any resources required by a hammock are employed whether you like it or not. Even during Resource Critical Analysis where there are insufficient resources, the hammock claims its share.

Note: Beware of the deadly embrace! If an activity delaying the completion of a hammock is delayed because the hammock is using all its resources then the activity and the hammock go on being delayed indefinitely.

Overlapping Activities during Resource Analysis.

Let's take a look at this structure from Resource Analysis' point of view:

Focus on the activity 'Lay Pipes'.



The only way Micro Planner detects a 'ladder' structure is where you have specified both Excavate Trench and Lay Pipes as Ladder type activities. You must also have specified the lead and the lag as appropriate types.

As Resource Analysis time slices - or bulldozes - forward it arrives at Lay Pipes and notices that it is a Ladder type. This triggers a feverish set of operations:

- Look for a lead entering event C - it finds our lead type activity.
- Follow the lead back to its preceding event A, picking up the lead duration 2 on the way.
- Look for a ladder activity leaving A - it finds Excavate Trench.

d) Make sure the lead time is being maintained. Thus if Excavate Trench has been delayed or split due to a shortage of resources (or due to some preceding ladder) then the information is fed back to Lay Pipes and a delay is prescribed to maintain the lead of 2.

That is not the end of the story, it continues:

e) Look for any *other* ladder types leaving A and if found, check the lead is maintained for them.

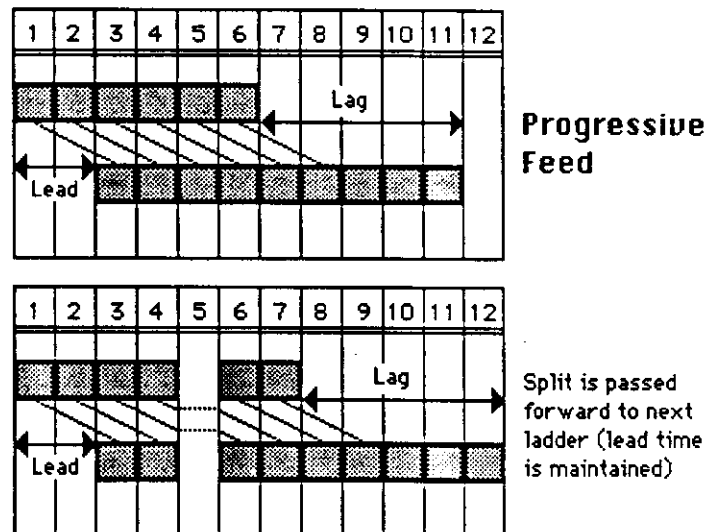
f) Look for any *other* leads entering C and repeat the same process.

g) Look for any lag activity entering D - yes you've guessed, it finds the lag activity and maintains the lag time.

h) Check any other lags entering D.

It is, therefore, possible to build a web of overlapping activities, some of which overlap from more than one predecessor.

The effect of the above sequence of steps is that the first ladder activity in the ladder structure progressively feeds to the second ladder activity and so on. The ladder structure could equally be called the **Progressive Feed** technique.



Note: Leads *push* and lags *pull*. On some occasions a lag may pull more than the lead pushes. This means that a following ladder may be forced to start later than the lead time prescribes because it is being pulled by a lag activity.

In Chapter 2, I pointed out that ladders may be *lead only* or *lag only* and that ladders may have a double dependency. These are all compatible with the steps (a→h) that Micro Planner takes when evaluating a standard ladder structure during Resource Analysis.

Priorities

When discussing Resource Analysis, you will have noticed that some activities take priority over others when competing for resources.

If you cannot sleep at night without knowing how these priorities are allocated then this section is for you...

...Micro Planner examines each activity in relation to others and sorts them like this:

- | | | |
|----|--|--|
| 1. | Hammock Activities | Hammocks always have top priority. |
| 2. | Activities with splitting restrictions... | This means Non-split or Consecutive. |
| 3. | ... and have started (or Consecutive) | These only have priority if the non-split condition is in force. |
| 4. | Ladder activities | Ladders have a higher priority than normal activities. |
| 5. | Activities already critical | When time critical, there are no delays. |
| 6. | Has it any FREE float? | Highest free float loses priority. |
| 7. | Has it any TOTAL float? | Highest total float loses priority. |
| 8. | When did it split? | The most recently split activity has priority. |
| 9. | Remaining duration | The activity which has longer to run has priority. |

Viewing Results

Once you have analyzed your model, you will want to see the results of your efforts. You may either print the full results as discussed in the next chapter or immediately view the results in graphic form as a screen barchart or screen histogram.

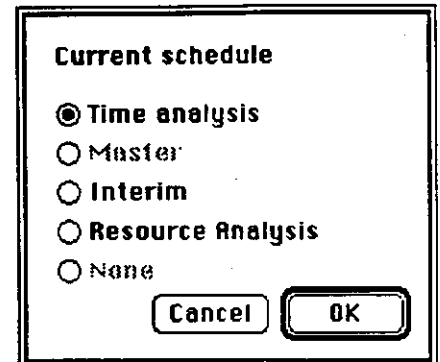
Screen Barchart

To look at the timing of your schedule:

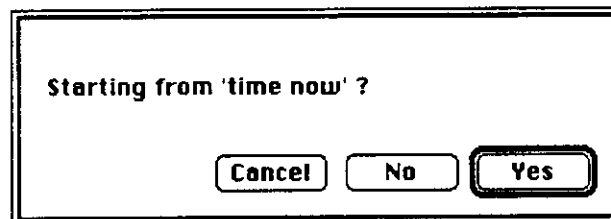
■ Choose Barchart from the View menu.

■ Click the button next to the required schedule.

Empty schedules are ghosted out.



A dialog box titled "Current schedule" with five radio button options: "Time analysis" (selected), "Master", "Interim", "Resource Analysis", and "None". At the bottom right are "Cancel" and "OK" buttons.

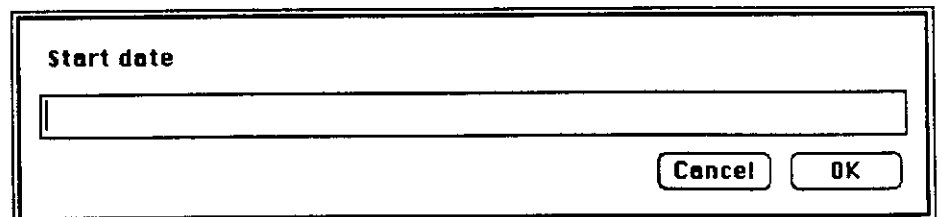


A dialog box titled "Starting from 'time now' ?" with three buttons: "Cancel", "No", and "Yes".

■ Click Yes if you want your schedule to select only activities which occur after Time Now.

Or, if you prefer to look at activities occurring from any other date then:

■ Click No.



A dialog box titled "Start date" with a text input field and "Cancel" and "OK" buttons at the bottom right.

■ Enter the required date in the box and click OK.

Any activities which finish before this date are excluded from the barchart.

■ Click the selected button next to Resources.

■ Check the relevant box(es) then click OK.

■ Click the 'all' button or the 'any' button, whichever is appropriate.

■ Click the selected button next to Types:

■ Click the relevant check box(es) so that the cross disappears.

Note: If, for example, you wanted to select Hammocks only then you would have to click all the other boxes which have a cross.

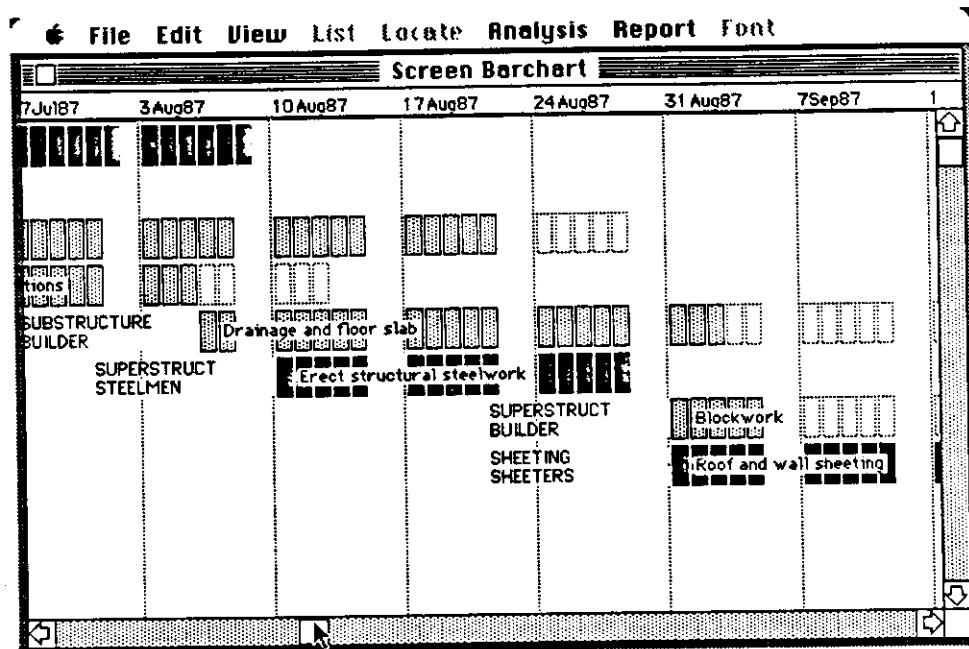
Each activity must satisfy all the selection requirements, therefore, you may end up with none selected if those requirements can never be met.

If, however, you decide to undo a selection then:

- Click the relevant 'all' button.

When you are satisfied with the selections made...

- Click the OK button to display the barchart.



The barchart shows each activity with its description superimposed over the bar and the labels displayed ahead of the bar.

Bars displayed as black (or red if you have a color system) are critical operations - operations which cannot complete any later without delaying the project.

Furthermore, when deadlines are being delayed, all supercritical activities are prefixed by striped bars showing the period of negative float.



Shaded bars indicate that an activity has float and the float period is ghosted after the bar.

An arrow on the chart represents a zero duration activity like a Flag.

- Scroll vertically or horizontally using the standard *Macintosh* scrolling controls.

The activities are sorted in time order therefore, scroll down and then to the right to see activities which are later.

You may print the screen barchart by choosing Print from the File menu but, first, ensure that you have selected the correct printer device and print settings as described in Chapter 5.

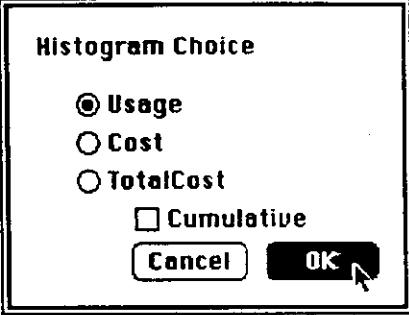
To leave the barchart:

- Click the 'close' box in the top left corner of the window.

Screen Histogram

If you have carried out a Resource Analysis, you may examine resource usage or costs like this:

- Choose Histogram from the View menu.



Histogram Choice

☒ Usage
☐ Cost
☐ TotalCost
☐ Cumulative

Cancel OK

Either,

- Click Usage if you want to see how many resources are used.

Or,

- Click Cost if you want to see what they cost.

Or,

- Click Total Cost to see what all your resources cost when added together.

Whichever of these three selections you have checked, you can choose to see daily figures or cumulative figures. To show the cumulative figures then:

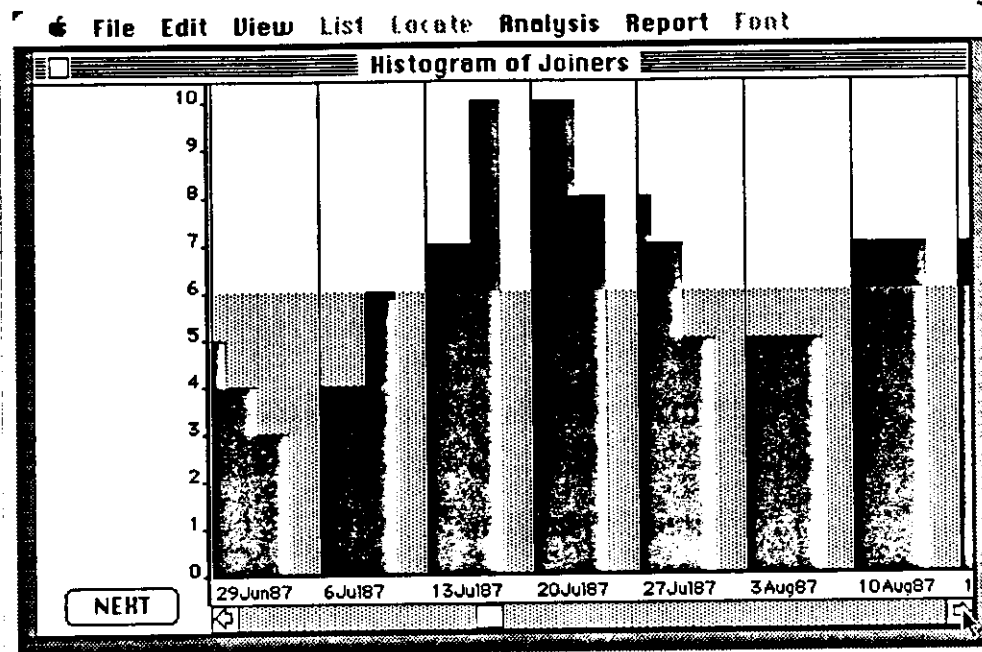
- Check Cumulative so that a cross appears then click OK.

If you have not chosen Total Cost then:

- Click the required resource to select it.

Resources Available	
A	N
B	O
C	P
D Draughtsmen	Q
E	R
F	S Steelmen
G	T
H	U
I	V
J	W
K	X
L Operatives	Y
M	Z

Cancel



To see more of your histogram:

■ **Scroll horizontally using the scrolling facility.**

If you have selected daily usage, the resource's availability is shown in faint shading. For monochrome systems, the usage of available resources is shown in a medium shade and any overload is displayed in black. For a color system, however, the resource usage is colored green and any overloads appear in red.

Notes: On your Usage histogram notice that, unless you have specified 7 day working week, the resources are not employed on the non-working days of the calendar.

Resource Analysis starts from Time Now and, therefore, the Total Cost histogram shows the the total cost of the project *after* Time Now. To see the total costs *before* and *after* Time Now, print a Cost Report as described in the next chapter.

Either,

■ **Click the NEXT button if you want to have a look at another histogram.**

Or,

■ **Click the 'close' box in the top left of the screen to return to the network model.**

Archives

Micro Planner is able to store five different schedules for each operation in the model. A schedule in this context can be defined as Start, Finish and Split dates.

The first two schedules contain the results of the most recent Time Analysis, the first for early dates and the second for late dates. Whenever you carry out a Time Analysis, these results are renewed.

Time Analysis {	Start	Finish
	Earliest times	
	Latest times	
	Resource Analysis	
	Master archive	
	Interim archive	

The third schedule contains the Resource Analysis results and is also renewed each time you do an analysis.

The other two schedules are for you to store any results which you wish to keep for future reference - they are called 'Archives'. The Progress Report enables you to compare different schedules and report on the slippage between the dates. Short Term Schedules and Key Event listings also enable comparison of schedules.

The two archives are named Master and Interim. There is nothing magical about those names and you can choose whichever you see fit.

Analysis	
Time analysis	
Resource Analysis...	
...Time Critical	
...Resource Critical	
Archive Resource analysis...	
...to Master	
...to Interim	
Archive Time analysis...	
...to Master	
...to Interim	

You are able to store either the Time Analysis schedule or the Resource Analysis schedule into whichever archive is applicable.

To store a Resource Analysis schedule in the Master archive do this:

■ Click the Analysis menu and drag past Archive Resource Analysis... and choose ... to Master.

Archive other schedules in a similar way.

Note: If you archive Time Analysis, it is the early schedule which is stored.



5

Printing
Reports



5

Printing Reports

Sooner or later, you will want to communicate the results of your efforts to others involved in the project.

To ensure that the right information reaches the right people, Micro Planner offers a variety of printed reports - each one designed for a specific purpose.

This chapter examines the types of reports available and the way in which each report may be tailored to present specific and selective information.

In other words, this chapter tells you *how* reports are generated and *what* information they contain - whereas Chapter 6 discusses *when* to use each type of report.

Report Options

Report

Barchart...
Activity listing...
Supercritical activities...
Progress report...
Short term schedule...
Cost report...
Key events...

Full listing

Network diagram...

Histogram...

Barchart scaling...
Histogram scaling...

All of the printed reports are initiated from the Report menu.

Before printing anything, ensure that you have selected the correct printer device and print instructions...

Printer Selection

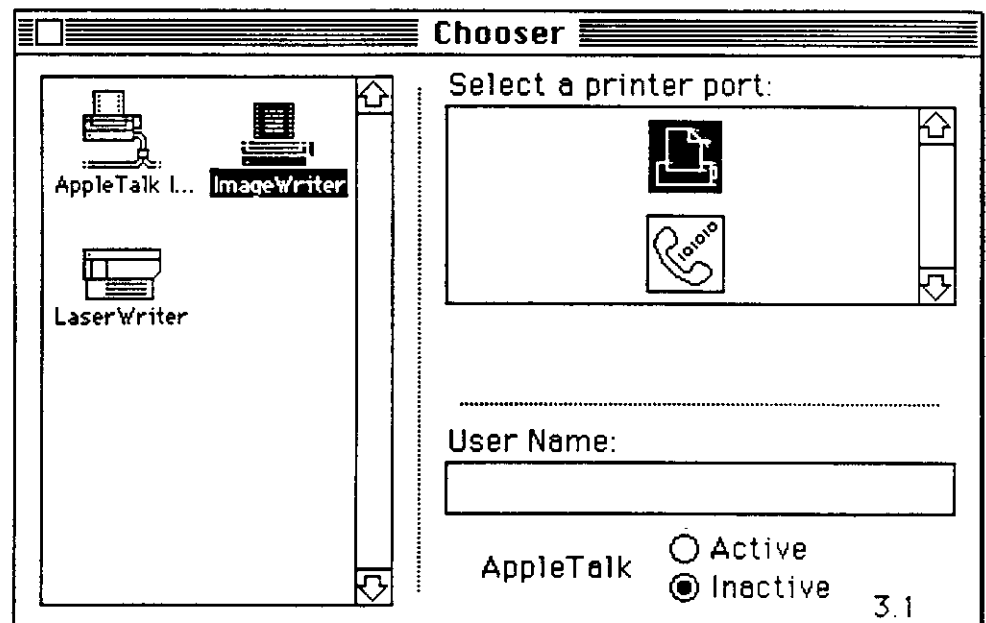
Firstly, check that the printer is connected and powered up. If you are using an Imagewriter II or Imagewriter LQ, you may insert a colour ribbon.

The next step is to check that you have the correct printer setting.

■ Select Chooser from the 'Apple' menu.

The Apple menu is at the far left of the menu bar.

The Chooser screen is then displayed similar to this:



■ Select the appropriate printer icon and printer port for the device you are using.

■ Click the 'close' box in the top left corner of the window.

Notes: If you are using devices on the Apple Talk™ Network you may have a choice of printers on the network.

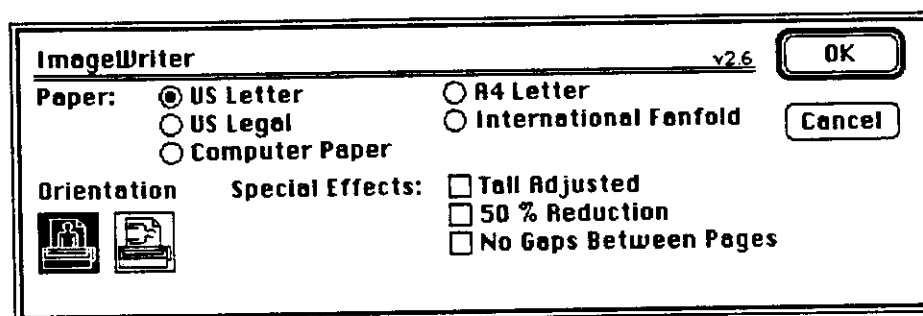
Those of you with Multi Finder may also have the option to select or deselect Background Printing.

Page Setup

Use Page Setup to specify the paper size and whether the report is to be printed down or across the page like this:

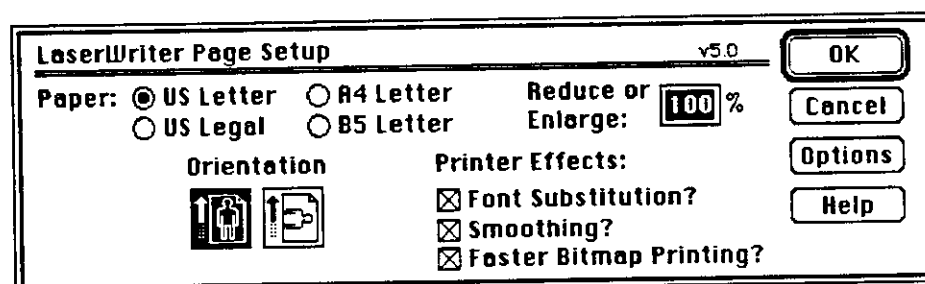
■ Choose Page Setup from the File menu.

For an Imagewriter printer, the following screen appears:



The Imagewriter v2.6 Page Setup dialog box has a title bar with the name and version. It contains a 'Paper' section with radio buttons for US Letter (selected), US Legal, Computer Paper, A4 Letter, and International Fanfold. An 'Orientation' section shows two icons: a portrait orientation (selected) and a landscape orientation. A 'Special Effects' section has checkboxes for Tall Adjusted, 50 % Reduction, and No Gaps Between Pages. Buttons for OK and Cancel are on the right.

Or, for a Laserwriter:



The LaserWriter Page Setup v5.0 dialog box has a title bar with the name and version. It contains a 'Paper' section with radio buttons for US Letter (selected), US Legal, A4 Letter, and B5 Letter. A 'Reduce or Enlarge' section has a percentage field set to 100%. An 'Orientation' section shows two icons: a portrait orientation (selected) and a landscape orientation. A 'Printer Effects' section has checkboxes for Font Substitution?, Smoothing?, and Faster Bitmap Printing? (all selected). Buttons for OK, Cancel, Options, and Help are on the right.

First, specify the size of paper being used.

For a 10" Imagewriter:

■ Click US Letter.

For a 15" Imagewriter
or Imagewriter LQ:

■ Click Computer Paper.

For a Laserwriter:

■ Select US Letter or A4 as appropriate.

Whether you are using an Imagewriter or Laserwriter, the next step is to select the paper orientation.

Either,

■ Click the left hand Orientation Icon to print across the page in the conventional manner.



Or,

■ Click the right hand Orientation Icon to print down the page (sideways).



Notes: For a 10" Imagewriter, you may fit most reports (except barcharts, histograms, networks) across a single page by selecting the appropriate font as discussed later and printing sideways.

For networks and barcharts printed on continuous paper, careful selection of the paper orientation can reduce the number of joins required when assembling large charts. Turn to Appendix A for further information.

Remember that, unlike normal letter width paper, computer paper is wider than it is long. This means that if you are using a 15" Imagewriter or an Imagewriter LQ and want to use the full width of the paper, then select the icon to print across (and not down) the page.

Finally, select the optional effects as appropriate.

Either, for an Imagewriter:

■ Click 'No breaks between pages' to print a report where the pages must be joined.

■ Click 50 percent reduction to produce reports at half size.

Or, for a Laserwriter:

■ If not already highlighted, double click on the Reduce or Enlarge box to select it.

■ Type the percentage reduction as appropriate.

Schedule Selection

When you choose a report (with the exception of **Supercritical activities**), Micro Planner asks for the schedule's results it should use.

In other words, do you want to see the current Time Analysis results, Resource Analysis results or the results stored in the Master or Interim Archives. The archives may, of course, be the results of earlier Time Analyses or Resource Analyses.

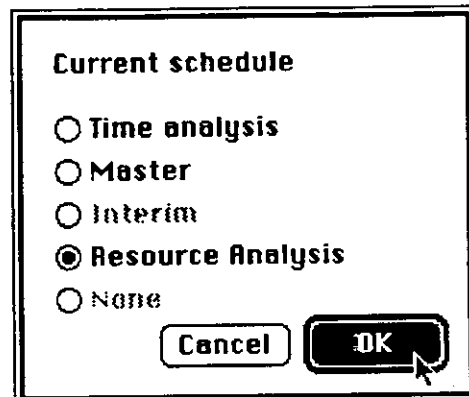
Note: Supercritical activities reports only use the current Time Analysis results so the question of *which schedule* does not arise.

The following display appears with unavailable selections ghosted out:

■ Click the button next to the appropriate schedule.

■ Click OK.

Progress reports, Short term schedules and Key event reports are capable of comparing the selected schedule with another schedule (usually an archive) and, therefore, an additional selection box appears for the *old* schedule.



Current schedule

☐ Time analysis

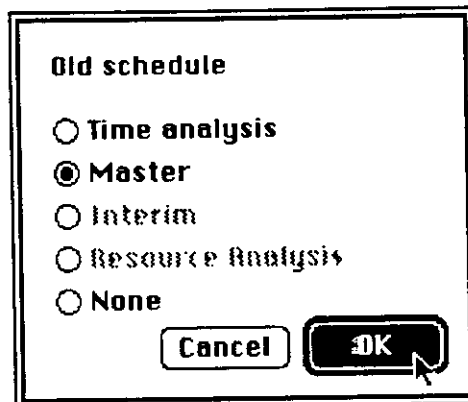
☐ Master

☐ Interim

☒ Resource Analysis

☐ None

Cancel OK



Old schedule

☐ Time analysis

☒ Master

☐ Interim

☐ Resource Analysis

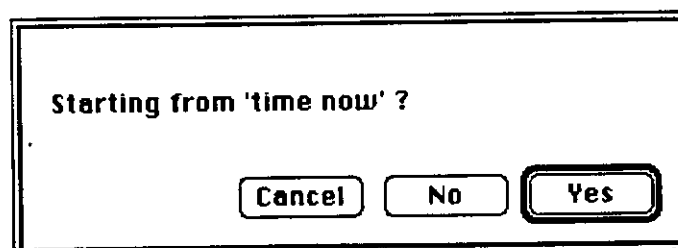
☐ None

Cancel OK

Progress reports are meaningless without such a comparison - whereas for Short term schedules or Key event reports, you may select *none* in place of the *old* schedule if you do not want to compare schedules in this way.

Barchart Start

When you choose either a Barchart or a Short term schedule, Micro Planner asks for the starting date like this:



Starting from 'time now' ?

Cancel No Yes

■ Click Yes if you want the chart to start from Time Now.

Otherwise,

■ Click No.

In which case, the program persists with:

A dialog box with the title 'Start date'. It contains a single-line text input field. At the bottom right, there are two buttons: 'Cancel' and 'OK'.

■ Type the starting date in the space provided.

Dates are entered in the form DAY (numbers), MONTH (first three letters) and YEAR (numbers) like this:

15jun87

Or, like this:

15-jun-87

■ Click OK.

Any activities which finish before this date will be excluded from the barchart.

Note: You may use historic dates (in other words, before Time Now) as well as future dates.

Showing Float

For **Barcharts** (apart from those showing Time Analysis results) and **Short term schedules**, you may choose whether or not to show the float for each activity. This means that barcharts which are to be used as work schedules need not advertise spare time.

Time Analysis barcharts, on the other hand, always show the available float because they display the Latest dates anyway.

You are prompted:

A dialog box with the question 'Do you require float ?'. At the bottom, there are three buttons: 'Cancel', 'No', and 'Yes'.

■ Click Yes or No.

Include Resources?

When you choose a **Barchart** or a **Short term schedule**, you have the option of printing the usage of resources against each activity. If you include resources on a barchart, resource usage is printed beneath the appropriate activity descriptions and additional bars indicate where the resources are being used.

You are asked:

Show resources on report ?

■ Click **Yes** to include resource usage.

Otherwise,

■ Click **No**.

Activity Selection

Apart from **Supercritical activities** and **Key events**, the reports are preset to print all activities in the network excluding dummies, leads and lags.

If you want to further reduce the field of selection then read on...

Activity Selection

Responsibilities	☒ all	☐ selected
Zones	☒ all	☐ selected
Resources	☒ all	☐ selected
Types	☐ all	☒ selected

Activity Sorting

Sort Order	☐ time	☒ standard
-------------------	----------------------------	---

To select only activities in a particular Zone or Zones:

■ Click the **selected** button opposite Zones.

- Check the appropriate box(es) so that a cross appears.

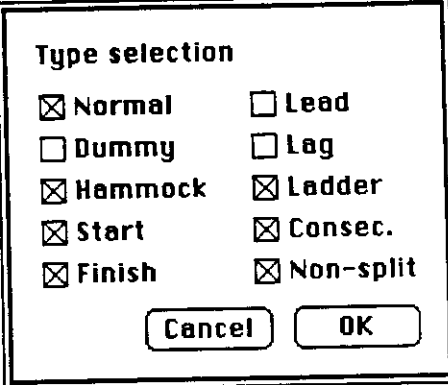
You may also choose whether or not an activity should employ all of the selected resources to qualify:

- Click the 'all' button or the 'any' button if appropriate.
- Click OK.

As mentioned earlier, selection of activity types is preset to exclude dummies, lead or lags. If you want to alter this pattern then:

- Click the selected button next to Types.

The Type selection window appears with all but dummy, lead and lag types selected.

A dialog box titled "Type selection" with a list of activity types and their selection status. The types are arranged in two columns. The first column contains: Normal (checked), Dummy (unchecked), Hammock (checked), Start (checked), and Finish (checked). The second column contains: Lead (unchecked), Lag (unchecked), Ladder (checked), Consec. (checked), and Non-split (checked). At the bottom right are "Cancel" and "OK" buttons.

Type selection	
☒ Normal	☐ Lead
☐ Dummy	☐ Lag
☒ Hammock	☒ Ladder
☒ Start	☒ Consec.
☒ Finish	☒ Non-split
Cancel OK	

You may exclude further activity types from the report like this:

- Click the appropriate box(es) so that the cross disappears then click OK.

Note: If, for example, you wanted to select only Hammock activities then you would need to deselect all of the other boxes which have a cross.

Finally, Micro Planner preselects the standard sort order (as described in the sections later in this chapter which relate to each type of report). If, however, you want the activities to be printed in chronological order then do this:

- Click the 'time' button next to Sort Order.

As you make your selections, remember that each activity must satisfy **all** of the selection requirements - make them **too** selective and you could end up disqualifying every activity in the model!

If you decide to undo a selection then:

- Click the relevant 'all' button.

Note: By choosing the required output, you have already reduced the field of selection. For example, by printing a barchart from Time Now, you automatically disqualify all activities which occur *before* Time Now - leaving only those activities which occur *after* Time Now available for further selection.

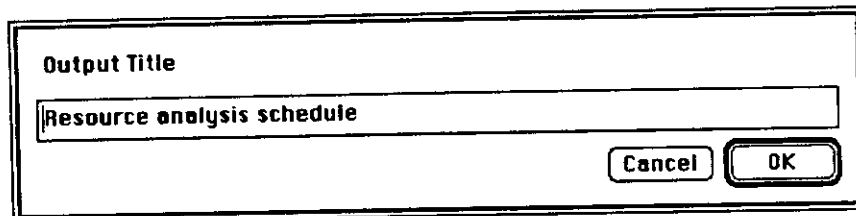
When all of the appropriate selections have been made:

■ Click OK.

Output Title

On all reports, a heading is printed on each page.

This box appears with a suggested title highlighted white on black:



Output Title

Resource analysis schedule

Cancel OK

To change the preset title:

Either,

■ Type a suitable title then click OK.

Or,

■ Edit the preset title in the usual *Macintosh* fashion then click OK.

Screen Previews

Once the report options have been completed, the program displays a preview of the report on the screen. This facility allows you to examine and customize the report before printing.

Micro Planner reports are made up of pages (or sheets).

Each network or histogram consists of a single sheet whereas other reports (for example, barcharts, Short term schedules) are made up of one or more headed and numbered sheets of a constant size.

Each single or numbered sheet may, in turn, comprise of more than one piece of printer paper.

On the screen preview, these page breaks are indicated by horizontal and vertical dotted lines. Use the vertical and horizontal scrolling facilities to move around the report thus giving you an idea of how the printed version will be paged.

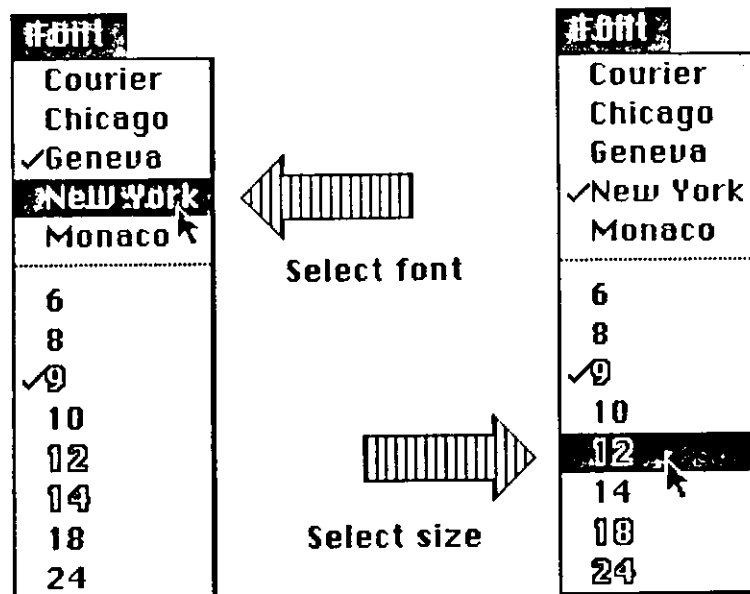
You may customize the appearance and pagination of your report by specifying options from the Page setup menu or by manipulating the fonts and, if appropriate, the scaling as discussed in the following sections.

When 50 percent or any other reduction has been selected, the text is not reduced on the screen but the page breaks and sheet sizes reflect the larger effective areas.

Font Selection

During the screen preview for a printed report (excluding histograms) you may change the type and size of the font used. This will change both the appearance of the text and the scaling of your report.

- Choose the desired font from the Font menu.
- Using the same menu, choose the appropriate size of font.



Monaco and Courier are monospaced fonts which means that each letter takes up the same space. Monospaced fonts produce a more compact report whereas proportionally spaced fonts tend to look more elegant.

If you are using a 10" Imagewriter then apart from barcharts, histograms and networks, you can fit the report across a single page if you select printing sideways in Page Setup and use either Monaco 9 or Courier 10.

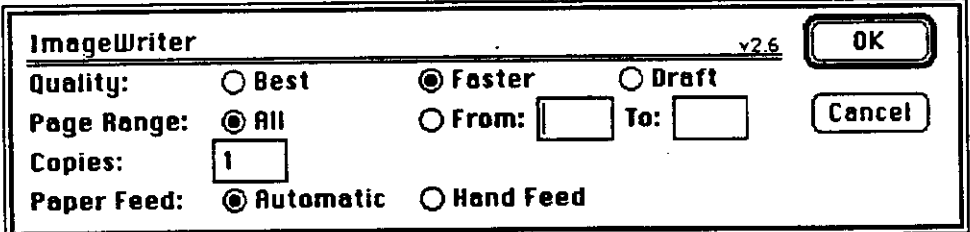
Notes: For each font, one or more of the sizes are shown as outlined numbers - these are the sizes for that font which are correctly proportioned on the screen or when using an Imagewriter.

If you have selected 50 percent reduction from the Page setup, choose a font which is 12 point or larger otherwise it will be illegible.

Print

Once your report has been customized to your requirements, all that remains is to print.

■ Choose Print from the File menu.



The image shows a print dialog box titled "ImageWriter v2.6". It contains several settings: "Quality" with radio buttons for "Best", "Faster" (selected), and "Draft"; "Page Range" with a radio button for "All" (selected) and options for "From:" and "To:"; "Copies" with a text box containing "1"; and "Paper Feed" with radio buttons for "Automatic" (selected) and "Hand Feed". There are "OK" and "Cancel" buttons on the right side.

■ Select the appropriate print settings.

Note: If you want to print part of a multipaged report, then enter the required page numbers in the *From:* and *To:* boxes. When you are printing a single sheeted report (network diagram or histogram), the page range refers to the individual pieces of paper. When printing other reports, then the Page Range refers to the actual headed sheets.

■ Click OK.

Your report is now printed.

Report Headings

Although all of the printed outputs are different, there is common information which heads them...

Date when Printed

Time Now Date

Your Project Title

Your Report Title

Page Number

Date : 1-JUN-87

Time Now :15-JUN-87

Project :Warehouse for Movit Ltd.

Output :Time analysis schedule

Page 1 of 1

**MICRO
PLANNER**

EARLY		LATE		Duration	Float	Identification
Start	Finish	Start	Finish			

UTILITIES

SPARKS

Electrical lighting and
distribution

7Oct87 3Nov87 7Oct87 3Nov87

4,0

0,0

4 (A) 4

Barcharts

The barchart is the main means of illustrating the project. The charts show activity information to a time scale and in a form that most people can understand.

To print a barchart:

■ Choose Barchart from the Report menu.

The following samples illustrate the features of a Time Analysis barchart and a Resource Analysis barchart:

Notice that the Time Analysis barchart includes columns for both Earliest and Latest dates.

On the Resource Analysis schedule, notice that...

- If you do not request float then the critical activities look no different from normal operations.
- If you request resources, their names, quantities and usage ('Per Day' or 'Total') are printed beneath the appropriate activity description. An additional bar is displayed beneath the normal activity duration to show when, within the activity, resources are being used.

Barcharts are sorted using these factors in descending order of priority:

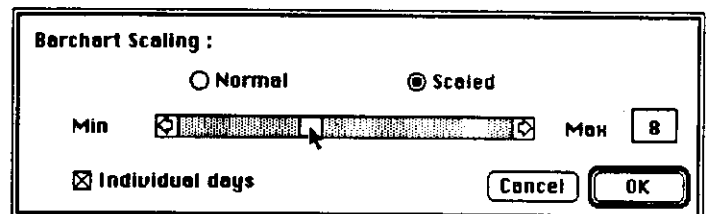
- Sorting codes
- Zone label position
- Responsibility label position
- Start date of current schedule
- Finish date of current schedule
- Latest time analysis finish date
- Preceding event name
- Succeeding event name
- Uniqueness identifier characters

Barchart Scaling

During the screen preview of a barchart, you may change the scale of the calendar like this:

■ **Select Barchart Scaling from the Report menu.**

■ **Click the Scaled button.**



Either, to compress the bars:

■ **Move the thumb in the scroll bar to the left towards 'Min'.**

Or, to lengthen bars:

■ **Move the thumb in the scroll bar to the right towards 'Max'.**

Notice that when you move the thumb in the scroll bar, the number in the 'Max' box changes accordingly. This number allows you to select the same scaling factor for subsequent barcharts.

If you want the bars to represent weeks instead of individual days then:

■ **Click 'Individual days' and the cross disappears from the box.**

Notes: To achieve maximum compression, move the thumb in the scroll bar all the way to the left and de-select individual days.

If you want to further reduce the width of the barchart, *increase* the font size, select the maximum compression settings as described above then *reduce* the print size to 50 percent from the Page Setup menu.

■ **Click OK.**

This activity started 18-May-87

Zone Labels

Responsibility Labels

Descriptions

Date : 1-JUN-87
 Time Now : 15-JUN-87
 Project : Warehouse for Movit Ltd.
 Output : Time analysis schedule
 Sheet : 1 of 1

Early Time Analysis Schedule

Late Time Analysis Schedule

Duration (weeks and days)

		EARLY Start	EARLY Finish	LATE Start	LATE Finish	Duration	Prec	Succ
DELIVERY								
SHEETERS	Order and delivery of sheeting materials	22Jun87	14Aug87	6Jul87	28Aug87	8,0	1	7
STEELMEN	Delivery of structural steel	18May87	8Aug87	-STD-	8Aug87	12,0	4	5
SUBSTRUCTURE BUILDER								
	Clear site & reduce levels	22Jun87	3Jul87	6Jul87	17Jul87	2,0	1	2
	Excavate and concrete foundations	6Jul87	29Jul87	20Jul87	12Aug87	3,3	2	3
	Drainage and floor slab	30Jul87	26Aug87	9Sep87	6Oct87	4,0	3	6
SUPERSTRUCT BUILDER								
	Blockwork	31Aug87	4Sep87	30Sep87	6Oct87	1,0	6	8
STEELMEN	Erect structural steelwork	10Aug87	28Aug87	10Aug87	28Aug87	3,0	5	6
SHEETING SHEETERS								
	Roof and wall sheeting	31Aug87	6Oct87	31Aug87	6Oct87	5,2	7	8
UTILITIES SPARKS								
	Electrical lighting and distributbn	7Oct87	3Nov87	7Oct87	3Nov87	4,0	8	9
FINISHINGS BUILDER								
	Interior finishings and decoration	7Oct87	27Oct87	14Oct87	3Nov87	3,0	8	9
COMPLETION								
	Project completion		3Nov87		3Nov87	0,0	9	10

Finish Flag Activity (only Finish dates)

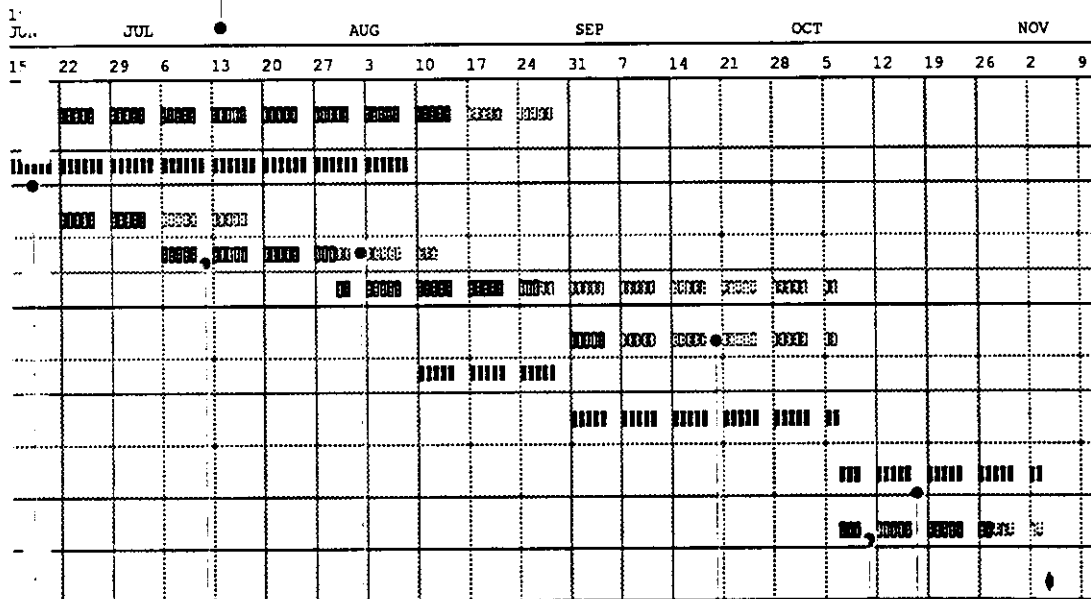
Preceding Events

Succeeding Events

Uniqueness Identifier

Calendar showing Monday Dates

**MICRO
PLANNER**



Float (Spare Time)

Normal Operations (have float)

Critical Operations (no float)

Flag

Only one (the selected) Schedule

Date : 1-JUL-87
 Time Now : 15-JUN-87
 Project : Marabona for Movit Ltd
 Output : Resource analysis schedule
 Sheet : 1 of 1

							1987		
							JUN	JUL	
		Start	Finish	Duration	Events Prec Succ		15	22	29
DELIVERY									
SHEETERS	Order and delivery of sheeting materials	22Jun87	14Aug87	8,0	1	7		13100	13100
STEELMEN	Delivery of structural steel	18May87	7Aug87	12,0	4	5	13100	13100	13100
SUBSTRUCTURE									
BUILDER	Clear site & reduce levels	22Jun87	3Jul87	2,0	1	2		13100	13100
	Excavate and concrete foundations	6Jul87	29Jul87	3,3	2	3			
	Operatives 3 Per Day								
	Operatives 5 Per Day								
	Drainage and floor slab	30Jul87	23Sep87	4,0	3	8			
	Operatives 6 Per Day								
SUPERSTRUCT									
BUILDER	Blockwork	10Sep87	22Sep87	1,0	6	8			
	Operatives 6 Per Day								
STEELMEN	Erect structural steelwork	10Aug87	28Aug87	3,0	5	6			
	Operatives 6 Per Day								
SHEETING									
SHEETERS	Roof and wall sheeting	31Aug87	6Oct87	5,2	7	8			
UTILITIES									
SPARKS	Electrical lighting and distribution	7Oct87	3Nov87	4,0	8	9 A			
FINISHINGS									
BUILDER	Interior finishings and decoration	7Oct87	27Oct87	3,0	8	9			
COMPLETION									
	Project completion		3Nov87	0,0	9	10			

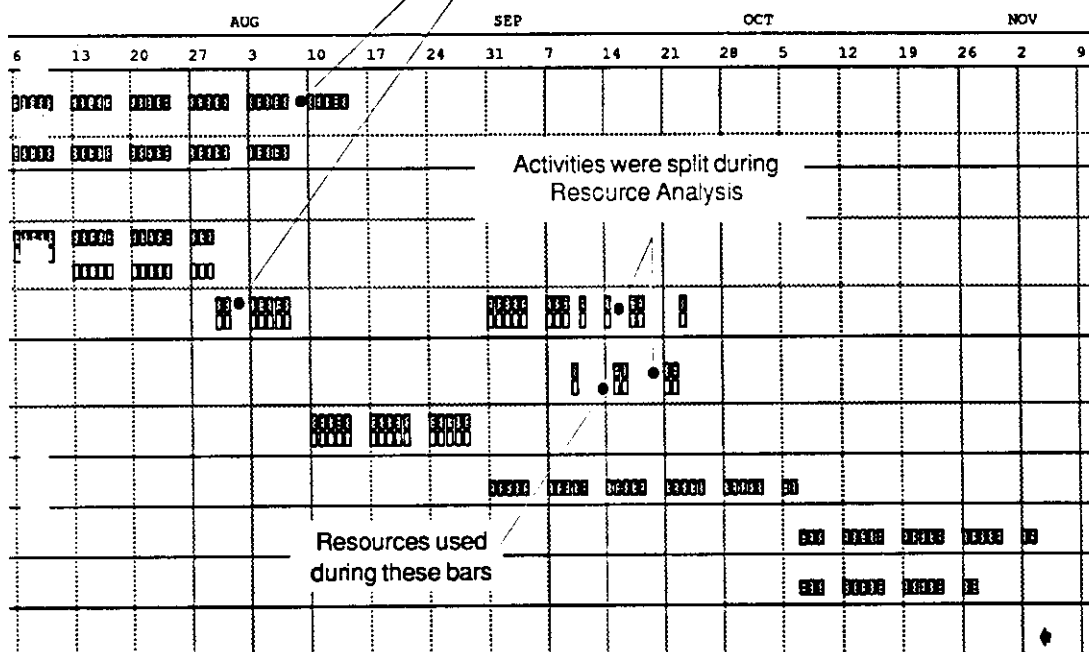
Resource Name

Resource Quantity

Resource Usage

(Resources are only displayed when you request them)

MICRO PLANNER



Activity Listings

If you want a rapid assessment of dates without a time scale then print an activity listing like this:

■ Choose Activity listing from the Report menu.

The sample listing illustrates the features.

Micro Planner treats Time Analysis listings in a different way to listings from Resource Analysis or Archives.

The listings for Time Analysis are preset to select all of the activities in the project. For other schedules, however, Micro Planner selects all activities after Time Now excluding dummies, leads or lags. These selections may, of course, be modified by using the selection choices.

The format for a Time Analysis listing differs from other schedules as it shows both earliest and latest dates and includes a column for 'float'.

Listings are sorted in the same way as barcharts.

Date : 1-JUN-87 Time Now : 15-JUN-87 Project : <u>Marathon for Merit Ltd.</u> Output : <u>Master archive schedule</u>				Page 1 of 1 MICRO PLANNER	
		Start	Finish	Duration	Identification
DELIVERY					
SHEETERS	Order and delivery of sheeting materials	22Jun87	14Aug87	8,0	1 → 7
STEELMEN	Delivery of structural steel	-STD-	8Aug87	12,0	4 → 5
SUBSTRUCTURE					
BUILDER	Clear site & reduce levels	22Jun87	3Jul87	2,0	1 → 2
	Excavate and concrete foundations	20Jul87	12Aug87	3,3	2 → 3
	Drainage and floor slab	9Sep87	6Oct87	4,0	3 → 8
SUPERSTRUCT					
BUILDER	Blockwork	30Sep87	6Oct87	1,0	6 → 8
STEELMEN	Erect structural steelwork	10Aug87	28Aug87	3,0	5 → 6
SHEETING					
SHEETERS	Roof and wall sheeting	31Aug87	6Oct87	5,2	7 → 8
UTILITIES					
SPARKS	Electrical lighting and distribution	7Oct87	3Nov87	4,0	8 → (A) → 9
FINISHINGS					
BUILDER	Interior finishings and decoration	7Oct87	27Oct87	3,0	8 → 9
COMPLETION					
	Project completion		3Nov87	0,0	9 → 10

Supercritical Activities

If your project includes one or more deadline dates, you may find that there are paths of activities which prevent those deadlines being achieved.

If such a path is delaying the project then you can identify it by printing a Supercritical activities report:

■ Choose Supercritical activities from the Report menu.

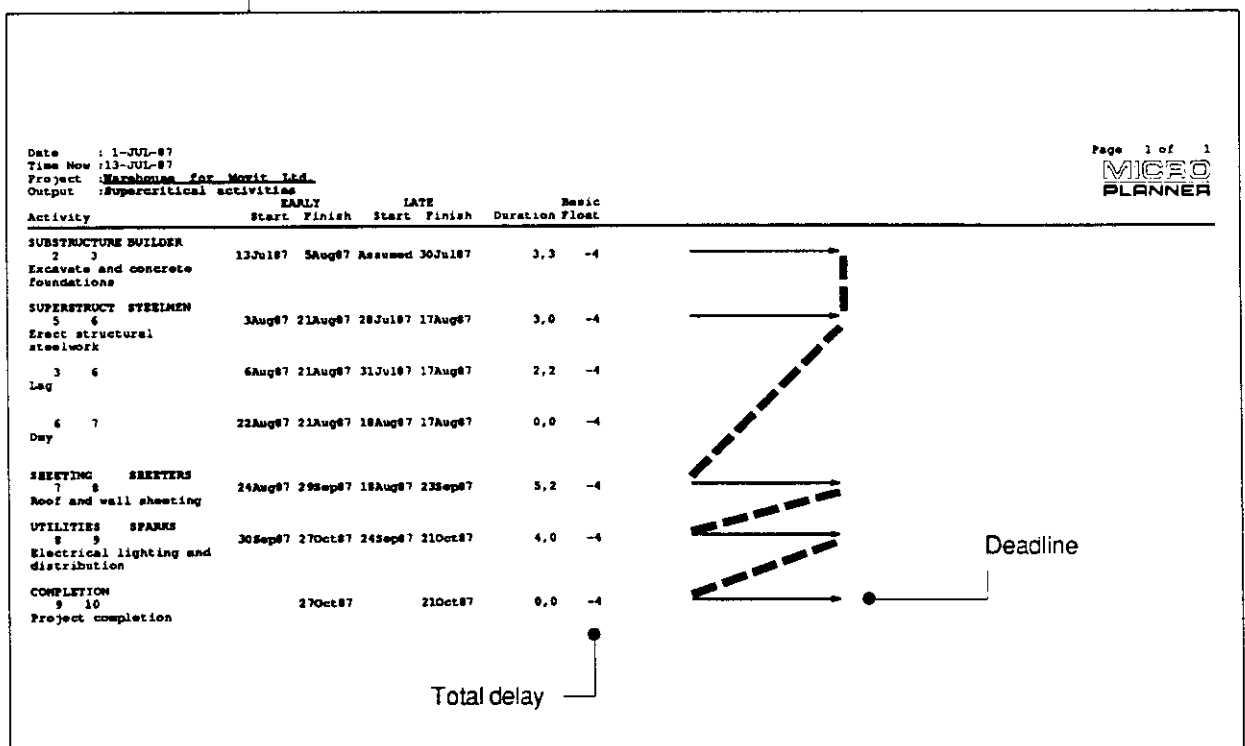
The program selects only those activities with negative float...

...therefore, this type of report has no purpose unless there is a deadline which is being delayed by Time Analysis.

Supercritical reports are sorted using the following factors in descending order of priority:

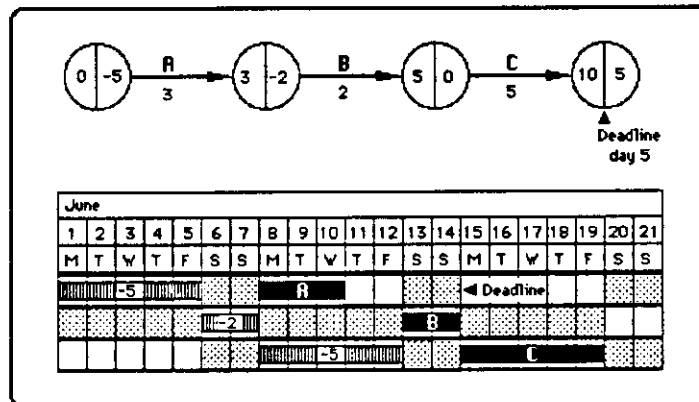
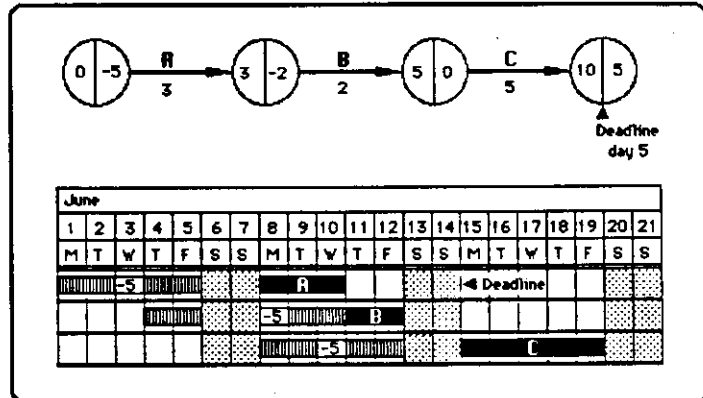
Total float
Time analysis earliest start date
Time analysis earliest finish date

The main features of a Supercritical activities report are shown in the following example:



Each negative float shows the total number of working days by which that activity is delaying the project.

This means that if *all* of the activities on a supercritical path use the same calendar then the negative floats will be identical as each activity delays the project by the same amount of time.



However! If these activities use different calendars then, despite being part of the same path, the floats may differ.

In this example, activities A, B and C are being delayed by 1 week but they show different floats. This is because a week's delay on a 2 day calendar (activity B) involves -2 working days compared to -5 working days on a 5 day calendar (activities A and C).

Activities which use different calendars may, of course, show the **same** float. Thus, a float of -5 working days for an activity on a 5 day calendar would mean a delay of 1 week but the same float on an activity using a 2 day calendar would mean a delay of 2 weeks and 1 day!

Similarly, the float for dummies (which do not abide by any set calendar) may not match up with activities which form part of the same supercritical path.

Progress Report

Progress reports are available for you to compare the performance of current activities against the forecasts on other schedules (usually archives).

For a Progress report you must, of course, have more than one schedule to compare.

To print a Progress report:

■ Choose Progress report from the Report Menu.

When you request a Progress report, the program selects all activities which have finished within the four weeks before Time Now or are expected to start within four weeks after Time Now.

You can narrow the choice of activities using the selection options described earlier.

Look at the example Progress report shown here to identify the features.

Old Schedule
 Current Schedule
 Latest Date

Date : 1-JUL-87
 Time Now : 15-JUL-87
 Project : Warehouse for Mervit Ltd.
 Output : Resource analysis & master archive

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MICRO PLANNER

		SCHEDULED		CURRENT		LATEST		Ahead of	Remaining
		Start	Finish	Start	Finish	Finish		Behind	Float
DELIVERY									
SHEETERS	Order and delivery of sheeting materials	<u>22Jun87</u>	14Aug87	<u>29Jun87</u>	21Aug87	3Sep87		-1.0	1.4
STEELMEN	Delivery of structural steel	<u>18May87</u>	7Aug87	<u>18May87</u>	7Aug87	13Aug87		+0.1	0.4
SUBSTRUCTURE									
BUILDER	Clear site & reduce levels	<u>22Jun87</u>	<u>3Jul87</u>	<u>29Jun87</u>	<u>13Jul87</u>	<u>13Jul87</u>		-1.3	0.0
	Excavate and concrete foundations	<u>6Jul87</u>	29Jul87	15Jul87	18Aug87	18Aug87		-2.6	0.0
	Drainage and floor slab	30Jul87	23Sep87	4Sep87	8Oct87	12Oct87		-2.1	0.2
SUPERSTRUCT									
STEELMEN	Erect structural steelwork	10Aug87	28Aug87	14Aug87	3Sep87	3Sep87		-0.6	0.0

Underlined dates are prior to Time Now

Negative numbers show slippage,
positive numbers show improvement

Current Float

Notes: The prime purpose of the Progress report is to compare the two selected schedules and, therefore, it shows the **slippage** between the schedules. To reflect the *real time* picture, slippage is shown for a seven day week (for example, -8 days would appear as -1,1) regardless of the calendar used by that activity.

If an activity was added to the model after the earlier of the two schedules was created then comparison is not possible. Under these circumstances, the message N/A (not available) is printed next to the appropriate activity in place of any dates.

Dates which are earlier than Time Now are shown underlined.

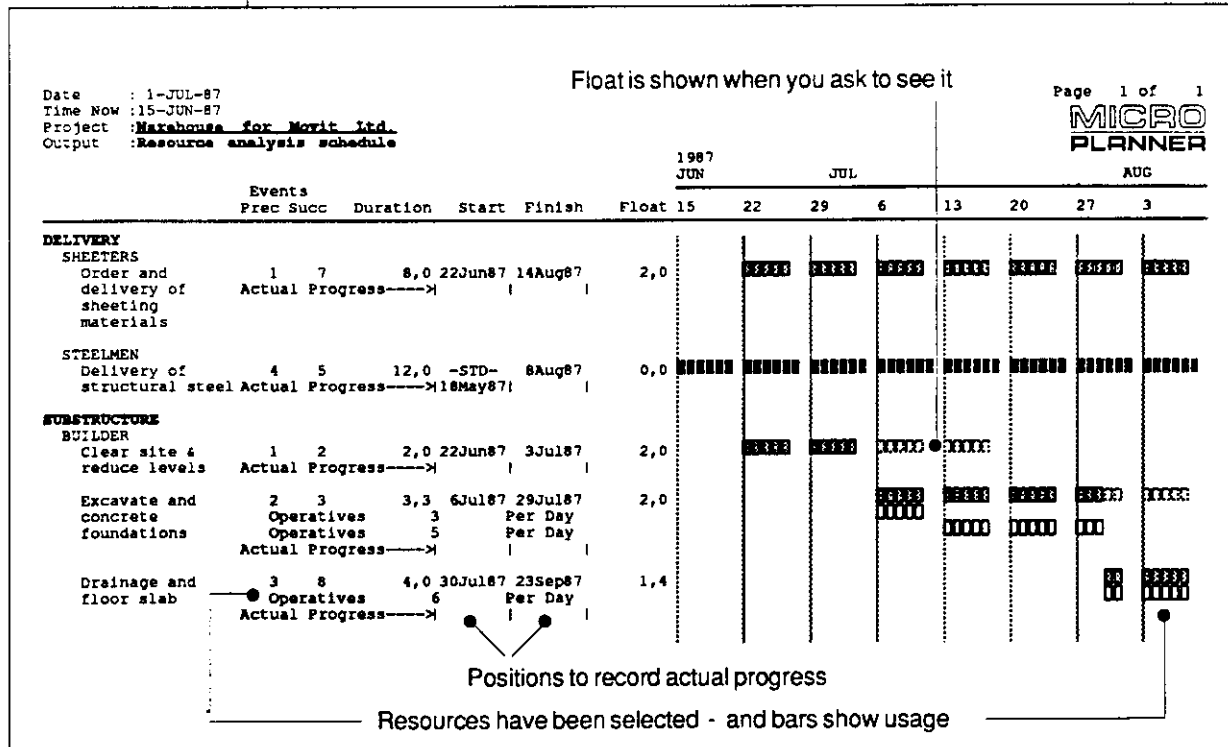
Progress reports are sorted in the same way as barcharts.

Short Term Schedule

The Short term schedule is a report with two functions:

First, it is designed to be issued to the project team as instructions for what to do in the next eight weeks.

Second, you can use it as a document for recording progress.



To print a Short term schedule:

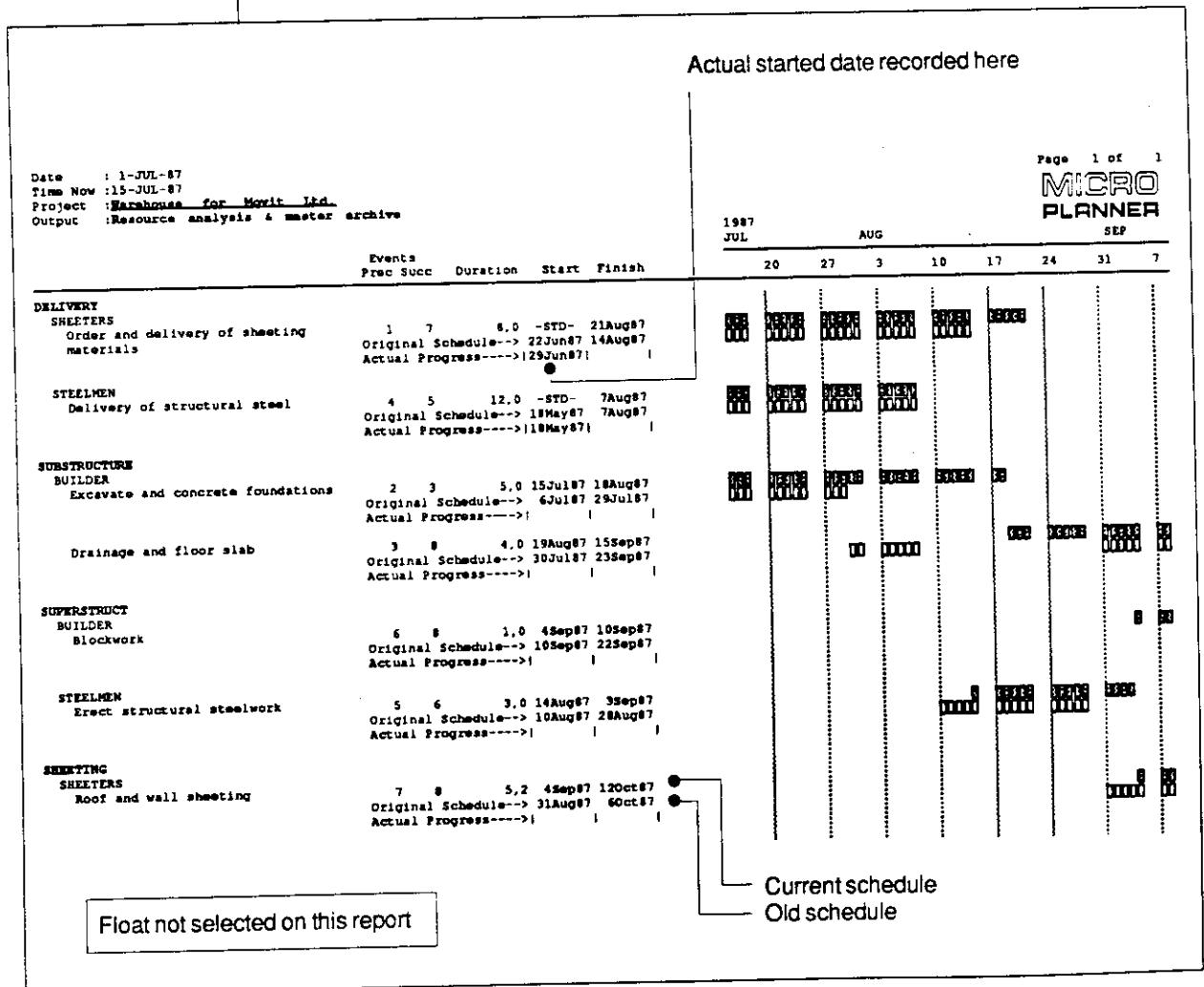
■ Choose Short term schedule from the Report menu.

When you choose a Short term schedule, Micro Planner selects all activities which occur within 8 weeks of the date you choose (usually Time Now).

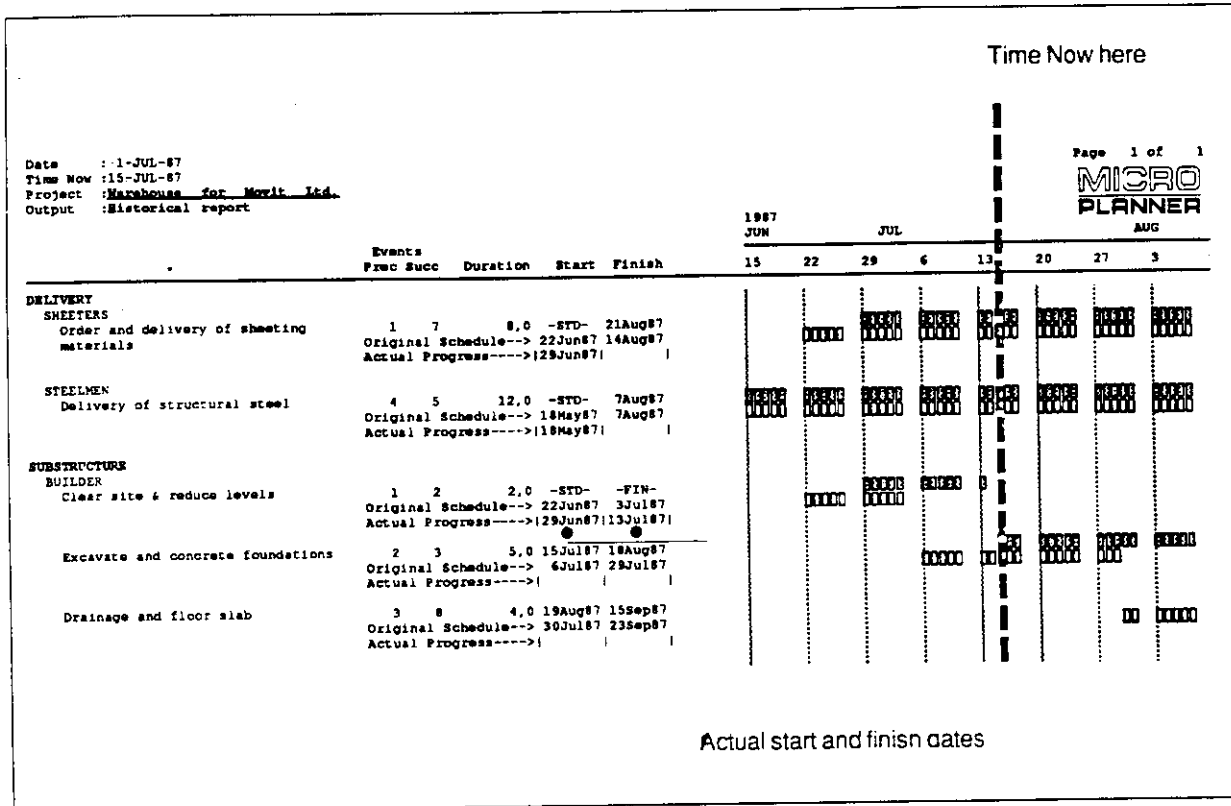
You can narrow down the choice by using the selection options.

Pick out the features on the three example Short term schedules shown here and notice the way they are used.

Short term schedules can be used to compare two schedules (usually a current schedule and an archive) like this:



Short term schedules can also be used to examine progress by selecting a date prior to Time Now to show historic information like this.



Note: Resources, when requested, are printed beneath the activity description as for barcharts.

Short term schedules are sorted in the same way as barcharts.

Cost Reports

The Cost report is designed to give you a cost breakdown of the activities based on the current resource information available on your project model - it does not use dates and, therefore, is independent of any of the schedules.

The Cost report does, however, ask you which schedule you wish to use. This is NOT to show the cost at the time the schedule was carried out but to calculate the cost of any hammocks whose durations may vary from schedule to schedule.

To recap:

The Cost report shows the costs of the current resource levels with hammocks costed according to their durations in the selected schedule.

To produce a Cost report:

■ Choose Cost report from the Report menu.

Cost reports are preset to include all activities with the exception of dummies, leads and lags. You may, of course, change this by using the selection parameters.

Note: Using the selection facilities, it is possible to obtain costings for particular Zones, Responsibilities, Resources etc.

At the end of the Cost report, all costs in the report are totalled.

Cost of individual resource

Date : 1-JUL-87
 Time Now :15-JUN-87
 Project :Warehouse for Movit Ltd.
 Output :Cost of activities with resources

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**MICRO
PLANNER**

RESOURCES> Name		Identification			Usage	Cost
		Start	Finish	Quantity		
SUBSTRUCTURE BUILDER	Excavate and concrete foundations			3	Per Day	2700.00
				5	Per Day	11700.00
						14400.00
	Drainage and floor slab			6	Per Day	21600.00
						21600.00
SUPERSTRUCTURE BUILDER	Blockwork			6	Per Day	5400.00
				20.00	Total	4000.00
						9400.00
STEELMEN	Erect structural steelwork			6	Per Day	16200.00
						16200.00
Total =						61600.00

Total cost for individual activity

Total cost of all selected activities

Key Event Reports

Key events are the *milestones* of your project. The Key event report enables you to report on those milestones. Such reports may typically be presented to clients or senior management - people who would not be concerned with the *detail* of your project.

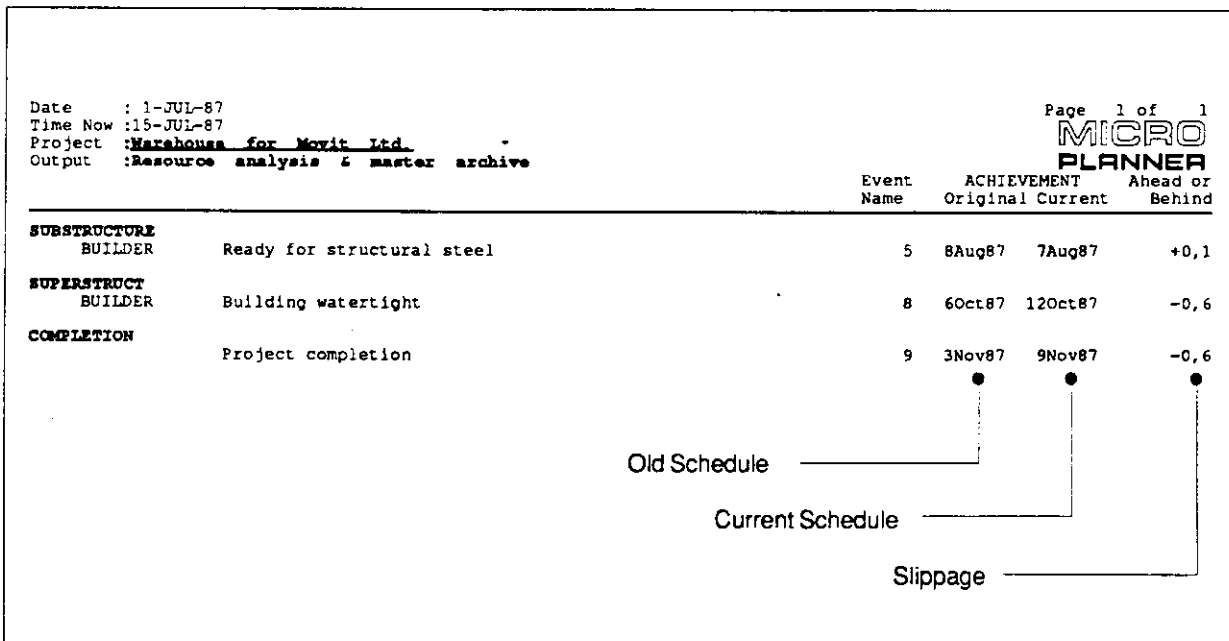
To print a Key event report:

■ Choose Key events from the Report menu.

When you choose this report the program selects all Key type events.

An example of a Key event report is shown here.

If you choose an Old schedule then dates for both the *old* and the *current* schedules are printed for each activity together with a slippage comparison.



Key event reports are sorted using the following factors in descending order of priority:

- Sorting codes
- Zone label position
- Responsibility label position
- Achieved dates for current schedule
- Float
- Event names

Full Listing

Full listings are designed to give you a complete 'dump' of your project data.

To print a Full listing:

■ Choose Full listing from the Report menu.

When you choose this report the program selects all activities and events.

An example of a Full listing is shown here:

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**MICRO
PLANNER**
Sortcode
Zone

Date : 1-JUL-87 Time Now : 15-JUN-87 Project : Warehouse for Movic Ltd. Output : Network Data		Identification	Duration	TIME ANALYSIS		ARCHIVES		RESOURCE	FIXED	PROGRESS	Resp	Quantity	Usage
Type	Calendar	Description	Balance	Early	Late	Master	Interim	ANALYSIS	DATES	DATES			
								RESOURCES> Name	Start	Finish			
Begin		Start of project		Starts> 21Jun87	5Jul87	21Jun87	N/A	21Jun87	22Jun87				
Normal	1	Clear site & reduce levels	2.0	Starts> 22Jun87	6Jul87	22Jun87	N/A	22Jun87				BUILDER	SUBSTRUCTURE
				Finish> 3Jul87	17Jul87	3Jul87	N/A	3Jul87					
Normal	1	Order and delivery of sheeting materials	8.0	Starts> 22Jun87	6Jul87	22Jun87	N/A	22Jun87				SHEETERS	DELIVERY
				Finish> 14Aug87	28Aug87	14Aug87	N/A	14Aug87					
Ladder	1	Excavate and concrete foundations	3.3	Starts> 6Jul87	20Jul87	6Jul87	N/A	6Jul87				BUILDER	SUBSTRUCTURE
				Finish> 29Jul87	12Aug87	29Jul87	N/A	29Jul87	Operatives	0.0	1.0	3	Per Day
								Operatives	1.0	3.3	5	Per Day	
Lead	1	Lead	3.0	Starts> 6Jul87	20Jul87	6Jul87	N/A	6Jul87					
				Finish> 24Jul87	7Aug87	24Jul87	N/A	24Jul87					
Lag	1	Lag	2.2	Starts> 30Jul87	13Aug87	30Jul87	N/A	30Jul87					
				Finish> 14Aug87	28Aug87	14Aug87	N/A	14Aug87					
Normal	1	Drainage and floor slab	4.0	Starts> 30Jul87	9Sep87	30Jul87	N/A	30Jul87				BUILDER	SUBSTRUCTURE
				Finish> 26Aug87	6Oct87	23Sep87	N/A	23Sep87	Operatives	0.0	4.0	6	Per Day
Begin				Starts> 17May87	17May87	17May87	N/A	17May87					
				Finish> 17May87	17May87	17May87	N/A	17May87					
Normal	1	Delivery of structural steel	12.0	Starts> 18May87	18May87	18May87	N/A	18May87				STEELMEN	DELIVERY
				Finish> 7Aug87	7Aug87	7Aug87	N/A	7Aug87					

Full listings are sorted using the following factors in descending order of priority:

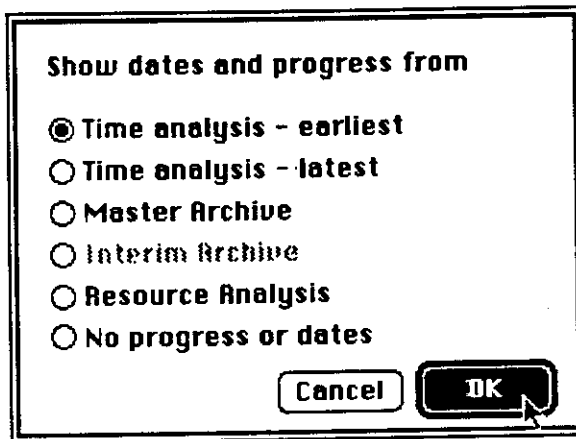
Preceding event name
Succeeding event name
Uniqueness identifier characters

Network Chart

If you want an overview of the project then plot the network like this:

- Choose Network diagram from the Report menu.

This box allows you to select the dates to be printed below the network arrows.



If you do not want to clutter the network diagram with dates:

- Click the last option 'No progress or dates'.

Otherwise,

- Click the appropriate schedule from which the network dates will be selected.

- Click OK.

Your network is now displayed on the screen.

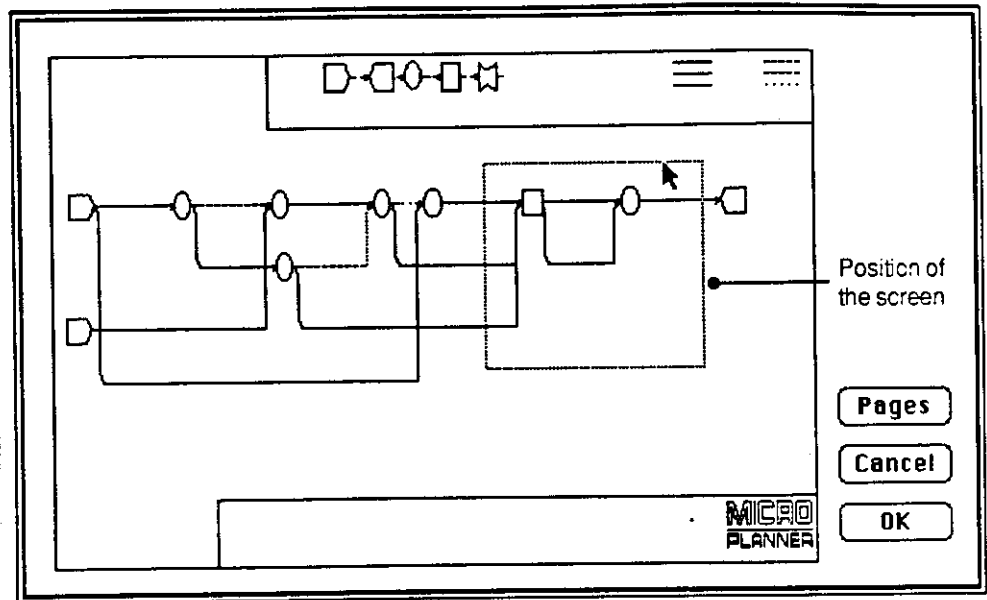
Use the scrolling facilities to move around and, if you want to see more:

- Choose a smaller Font size from the Font menu.

To see the whole of the network:

- Choose Reduce to fit from the View menu.

This option displays the whole of your network on the screen regardless of how large it is. For obvious reasons, Micro Planner does not attempt to include text on these reduced versions - similarly, the height and width of the network may be reduced by different proportions.



On the reduction, you will see a dotted rectangle which represents the current viewing window on the screen. You can move the field of view like this...

■ **Drag the rectangle to a different position.**

To do this: Position the mouse pointer inside or on the edge of the rectangle, press the mouse button and move the mouse without releasing the mouse button.

Either,

■ **Click OK to move to this new position on the full size screen.**

Or,

■ **Click Cancel to stay where you are.**

Finally, if you want to locate a specific point in the network...

■ **Choose Move to from the Locate menu.**

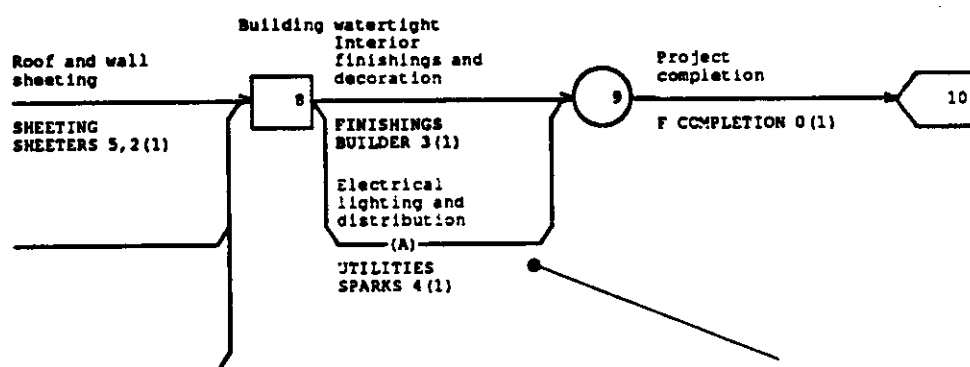
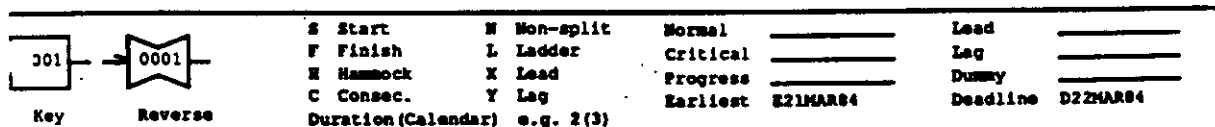
■ **Enter the event name and click OK.**

Having examined the network you can print it.

■ **Choose Print from the File menu.**

■ **Make the appropriate choices and click OK.**

Look at the following example of a plot and pick out the features.



Critical activities are depicted by red lines on color printers or medium thick lines on monochrome printers.

(Critical and progressed activities are only distinguished from normal activities when you select a schedule.)

**MICRO
PLANNER**

Histograms

This section describes how you can produce printed versions of the histograms which we examined in Chapter 4.

■ Choose Histogram from the Report menu.

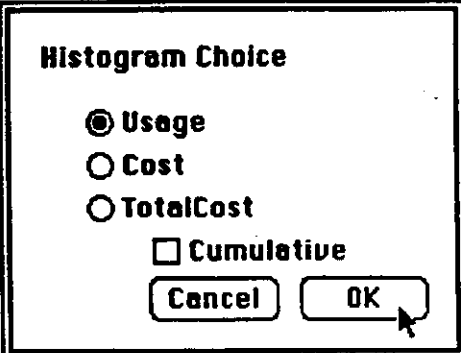
■ Click Usage if you want to print how many resources are used.

Or,

■ Click Cost if you want a chart of what they cost.

Or,

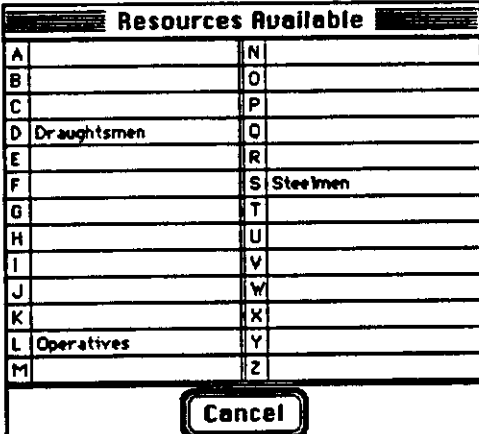
■ Click Total Cost if you want a histogram showing what all your resources cost when added together.



A dialog box titled "Histogram Choice" with three radio button options: "Usage" (selected), "Cost", and "TotalCost". Below these is a checkbox labeled "Cumulative". At the bottom are "Cancel" and "OK" buttons. A mouse cursor is pointing at the "OK" button.

Whichever of these three selections you have checked, you can choose to see daily figures or cumulative figures.

■ Check the Cumulative check box if that is your preference.



A dialog box titled "Resources Available" containing a table with two columns of letters A-M and N-Z. Some cells contain resource names: "Draughtsmen" in row D, column N; "Steelmen" in row F, column S; and "Operatives" in row L, column Y. A "Cancel" button is at the bottom.

A	N
B	O
C	P
D Draughtsmen	Q
E	R
F	S Steelmen
G	T
H	U
I	V
J	W
K	X
L Operatives	Y
M	Z

■ Click OK.

If you have selected either Usage or Cost then:

■ Select the resource by clicking on it.

The histogram appears on screen and you may, if you wish, change the height and width of the bars as described in the next section.

■ Choose Page Setup from the File menu, select the appropriate options then click OK.

■ Choose Print from the File menu, select the appropriate print settings then click OK.

Look at the example of a histogram and pick out the features.

Histogram Scaling

When previewing a histogram, you may change the width and height of the bars like this:

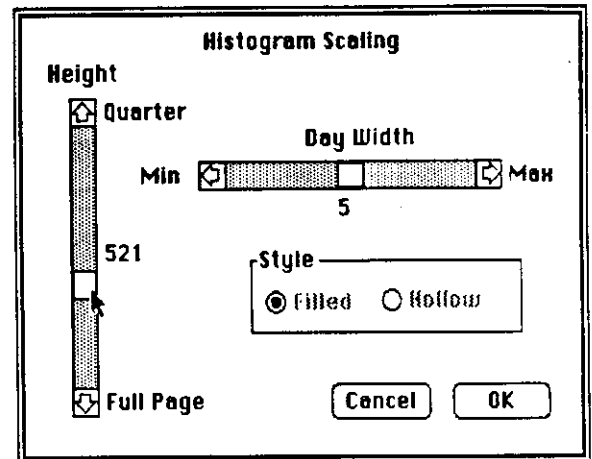
■ Select Histogram Scaling from the Report menu.

To change the bar width:

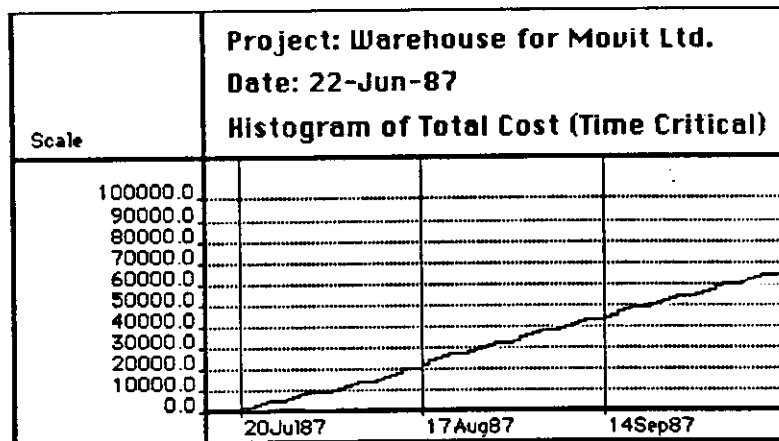
■ Either move the thumb in the scroll bar to the left towards 'Min' or to the right towards 'Max'.

The number beneath the scale bar may be used to select the same scaling factor for other histograms.

Similarly, to change the height of the bars:



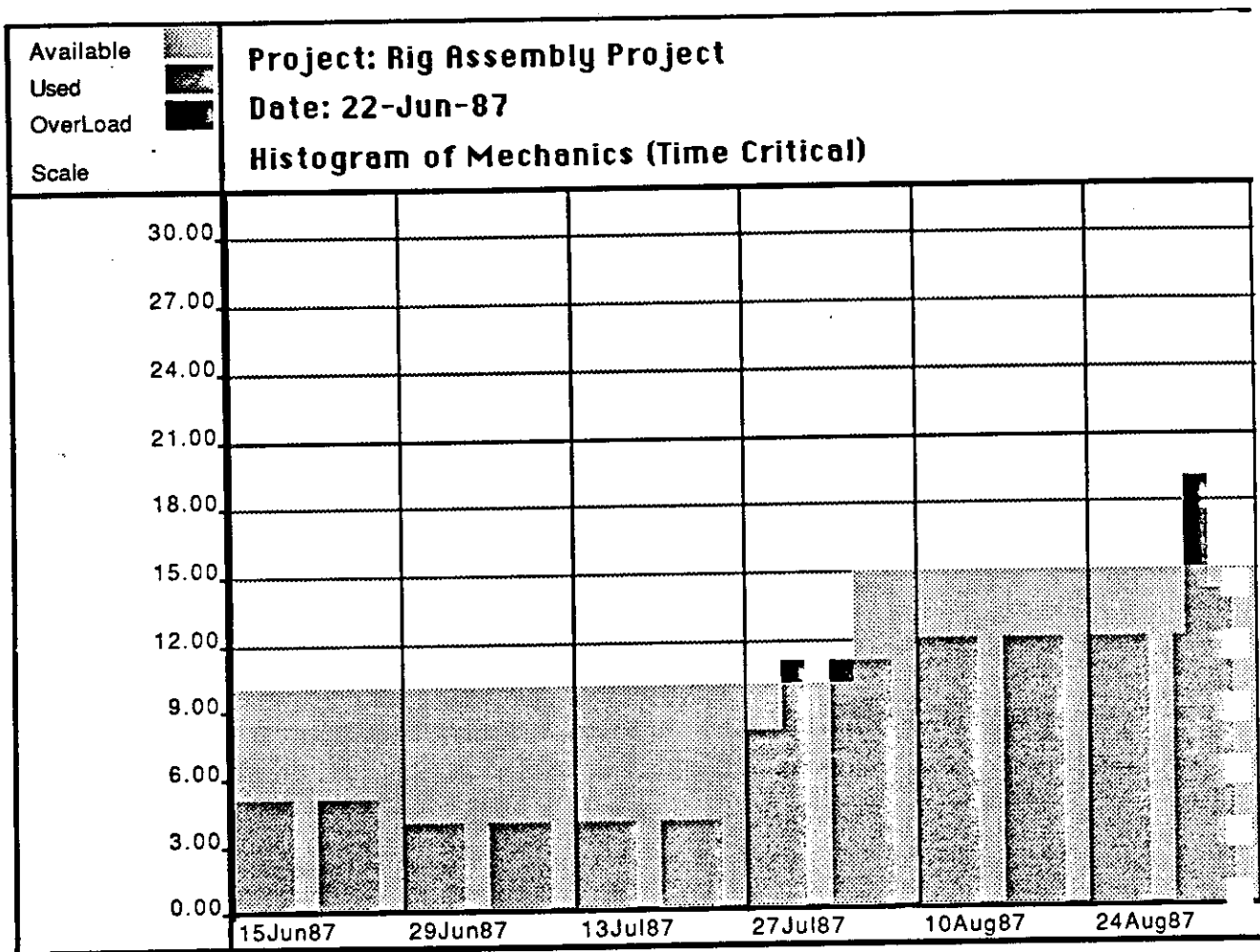
■ Either move the thumb in the scroll bar upwards towards 'Quarter' or downwards towards 'Full Page'.

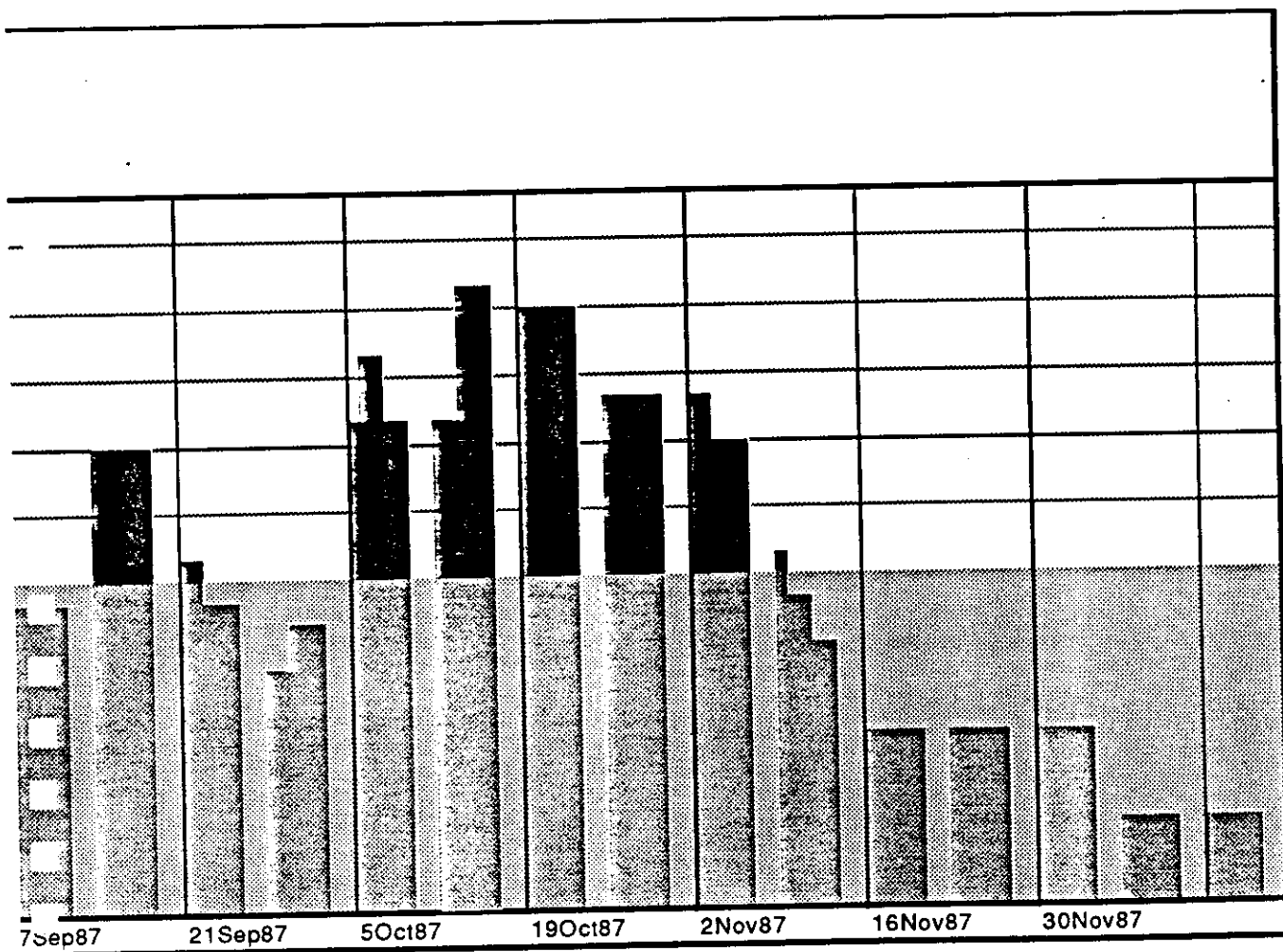


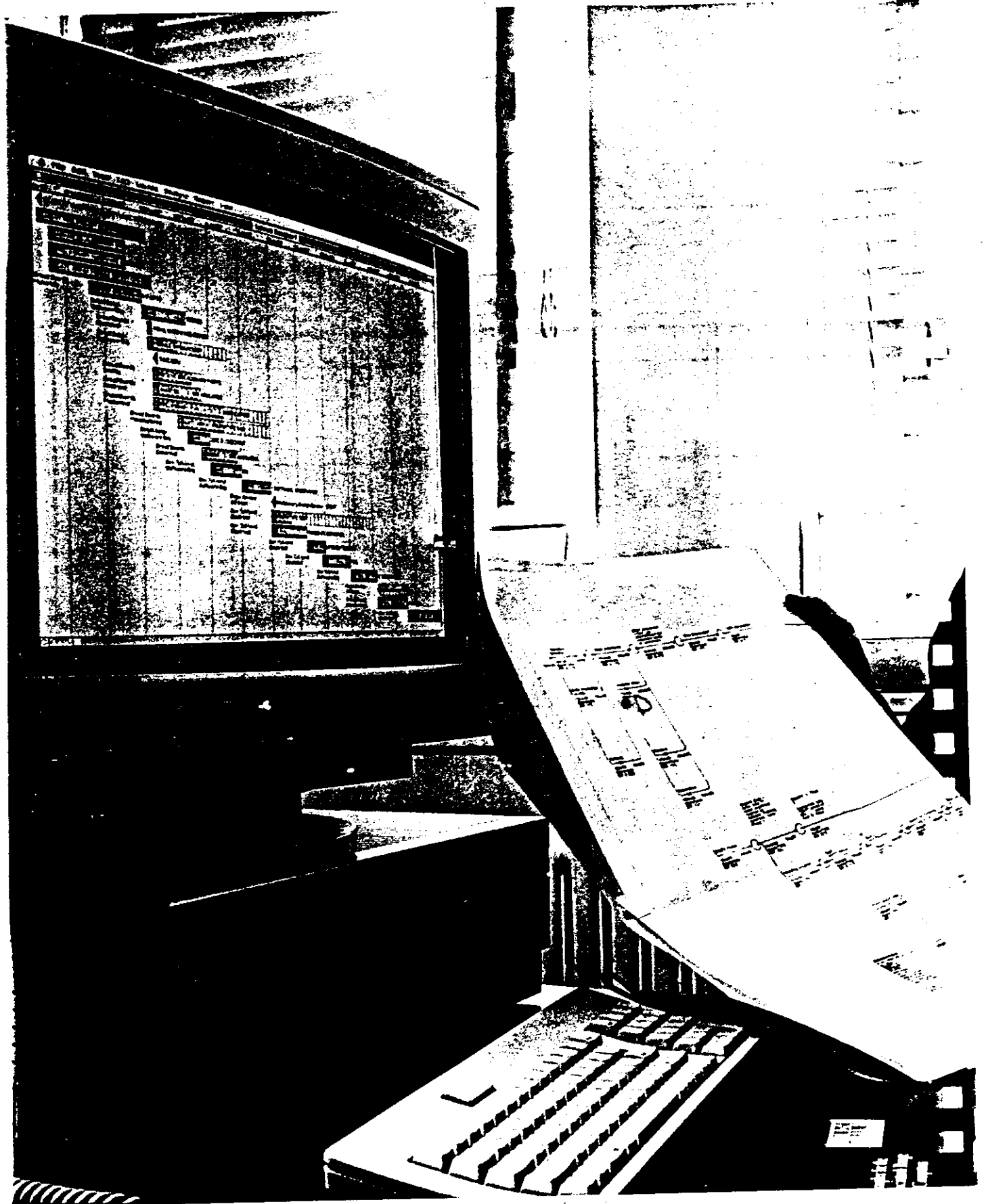
For Cost or Cumulative Usage histograms, you may opt for an outline instead of individual bars:

■ Click the 'Hollow' button then click OK.

Change these options until you are satisfied with the appearance and ready to print.







6

Managing the Project



6

Managing the Project

Why Managing?

The ultimate objective of any project planning operation is not planning for its own sake but effective project management.

This chapter examines the techniques of managing your project using Micro Planner. It does not examine the process of updating projects or of managing data which are looked at in more detail in the next chapter.

Scope of the Project

Before sitting down to prepare a network model, you should understand the overall scope of the project. What is the starting point, what are the objectives and in what detail should the project be modelled?

If you do not know who will be responsible for all functions within the project then make a point of finding out. If names are not yet known then be sure that you understand how responsibilities will be allocated.

Work out in your own mind how the project can be broken down into manageable chunks corresponding to Zones in your model.

Finally, if you are going to use some form of Sorting Code, figure it out at this stage.

The Project Model

If you are not familiar with the networking technique, you may prefer to draw a network on paper before entering it into the computer.

Whether you are drawing your network or entering it directly into the *Macintosh*, it is a good idea to prepare a list of all the activities you can think of - it helps you to organize your thoughts.

When preparing a model, you could do it in three phases...

1. Draw the Logic

Concentrate initially on producing a logic diagram.

You may prefer to prepare your model on paper first - blank continuous computer paper is a good medium because if you run out of space there is always more to unfold.

On paper, construct the network ignoring durations and resources - particularly resources - so that the logic is correct regardless of *how long* or *by whom*. Draw activities as they occur to you - don't be inhibited by the 'look' of the network, it can be as untidy as you like.

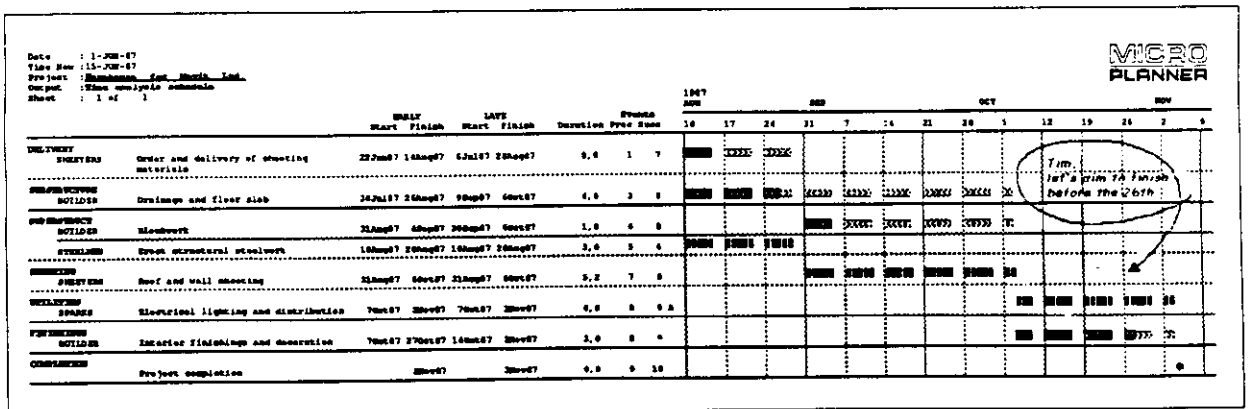
If you are entering the project model directly into the *Macintosh* you can print a network diagram at any time to clarify your thinking.

2. Add the Durations

Once the logic is as good as you can get it, go through the network deciding how long each operation should take and allocate durations. At this point, if you are working from a drawing, you should feed your model into the system.

Carry out your first Time Analysis, clearing any logic problems and print a Time Analysis barchart.

Never be satisfied with your first Time Analysis, the resultant schedule *invariably* takes too long. You should now start using the advantages of the networking technique to improve the timing of your project.



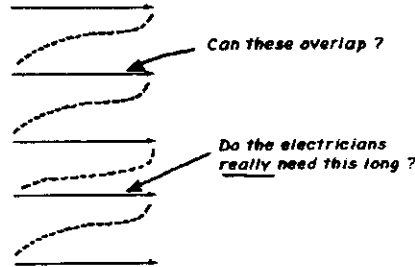
Examine the Time Analysis barchart of your project and decide whether an earlier completion date is feasible. If it is, then enter this new date as a deadline on the end event and re-analyze the model.

Date : 1-JUN-87
 Time Now : 15-JUN-87
 Project : Marathon for Merv Ltd.
 Output : Supercritical activities

Page 1 of 1
**MICRO
 PLANNER**

Activity	EARLY Start	EARLY Finish	LATE Start	LATE Finish	Duration	Float
6 7 Day	29Aug87	28Aug87	21Aug87	20Aug87	0,0	-8
DELIVERY STEELMEN 4 5 Delivery of structural steel	18May87	7Aug87	-STD-	30Jul87	12,0	-6
SUPERSTRUCT STEELMEN 5 6 Erect structural steelwork	10Aug87	28Aug87	31Jul87	20Aug87	3,0	-6
SHEETING SHEETERS 7 8 Roof and wall sheeting	31Aug87	6Oct87	21Aug87	28Sep87	5,2	-6
UTILITIES SPARKS 8 9 Electrical lighting and distribution	7Oct87	3Nov87	28Sep87	26Oct87	4,0	-6
COMPLETION 9 10 Project completion		3Nov87		26Oct87	0,0	-6

*Ed,
 this is the path
 that stops us
 achieving the 26th*



At this stage, use a Supercritical activities report to pinpoint the path(s) of activities which cannot finish in time to meet the new deadline. The activities which lie on the path(s) causing the most delay are the first to be listed by the report.

Focus on these first activities then, together with the barchart and a network diagram, examine each with the following questions in mind:

- Can the duration be shortened?
- Is the logic really correct?
- Can the activity overlap with previous or following activities?
- Is the new deadline really attainable?

There is a good chance that you will be able to make significant savings in timing.

Whether or not you are able to crunch your project down to the targetted deadline does not matter.

If you re-analyze the model, most of the remaining supercritical paths will probably have disappeared (they will have been 'nested' within the main path). If not, repeat the 'crunching' exercise until all the supercritical paths are cleared.

Having gone through this process, your timing will be more efficient and your deadlines more competitive.

3. Add the Resources

Enter the resources available to the project. If you don't know how many there will be, allow more than you would expect - you can reduce them later when the possible shape of resource usage starts to emerge.

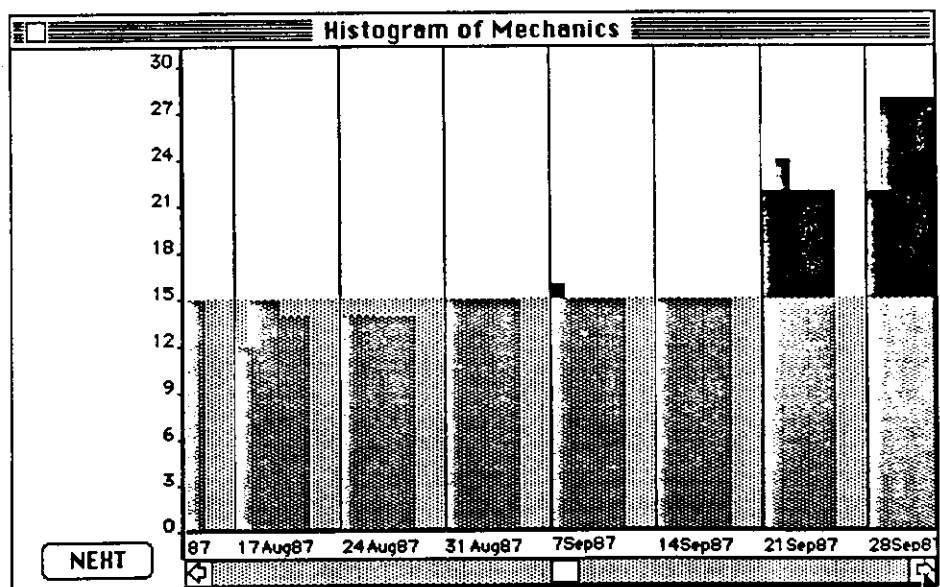
Now, go through the project again entering the resources used by each activity. Some research may be required to obtain these figures.

If actual quantities of resources are not known at this stage then enter *dummy* resources to level workloads.

An example of a dummy resource could be the 'Design Team' which, until the precise number of people in the team is known, could be given an availability of '1' so that the team's workload is levelled during Resource Analyses.

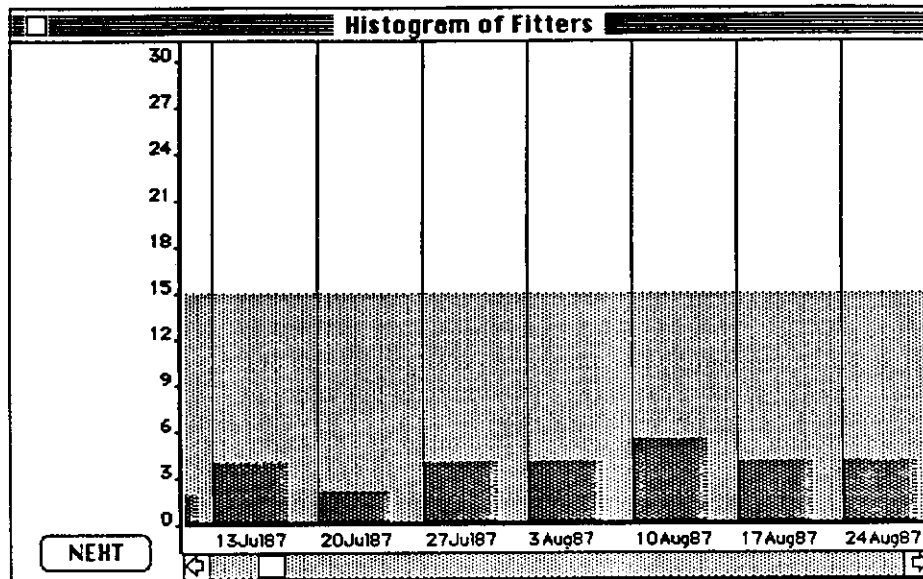
Now run a Resource Analysis **Time Critical** and look at your histograms of usage.

The following is an example of *resource starvation* - the system struggles to maintain level usage until everything becomes critical and the resources are finally overloaded.



Note: Activities can be delayed and overloaded by other resources which are in short supply. So don't assume that a resource (or an activity) is analyzed in isolation.

This histogram indicates that there are too many resources available.



If you know how many resources you have and you do not want them exceeded then carry out a Resource Analysis **Resource Critical**.

Resource Critical Analysis may delay your project beyond its deadlines and does not always use resources very efficiently. So we recommend that you only use this type of schedule to find out whether your deadlines should be extended.

Having run a **Resource Critical Analysis** to check the feasibility of deadlines, always return to **Time Critical** for actual project control. Minor overloads indicated on a resource usage histogram can usually be absorbed in practice.

Keep doing simulations until you are satisfied that resource usage and timing are satisfactory. Print barcharts of the Resource Analysis results to reveal the impact on the time scale.

You may have to relax your Time Analysis deadlines to ease resource levelling. If you need to extend deadlines beyond the Time Analysis early completion date then enter an earliest date on the end event as well as a deadline.

Presenting the Plan

Having carried out the simulations in the last few pages to produce your best solution, you will want to communicate this information to other members of the project team.

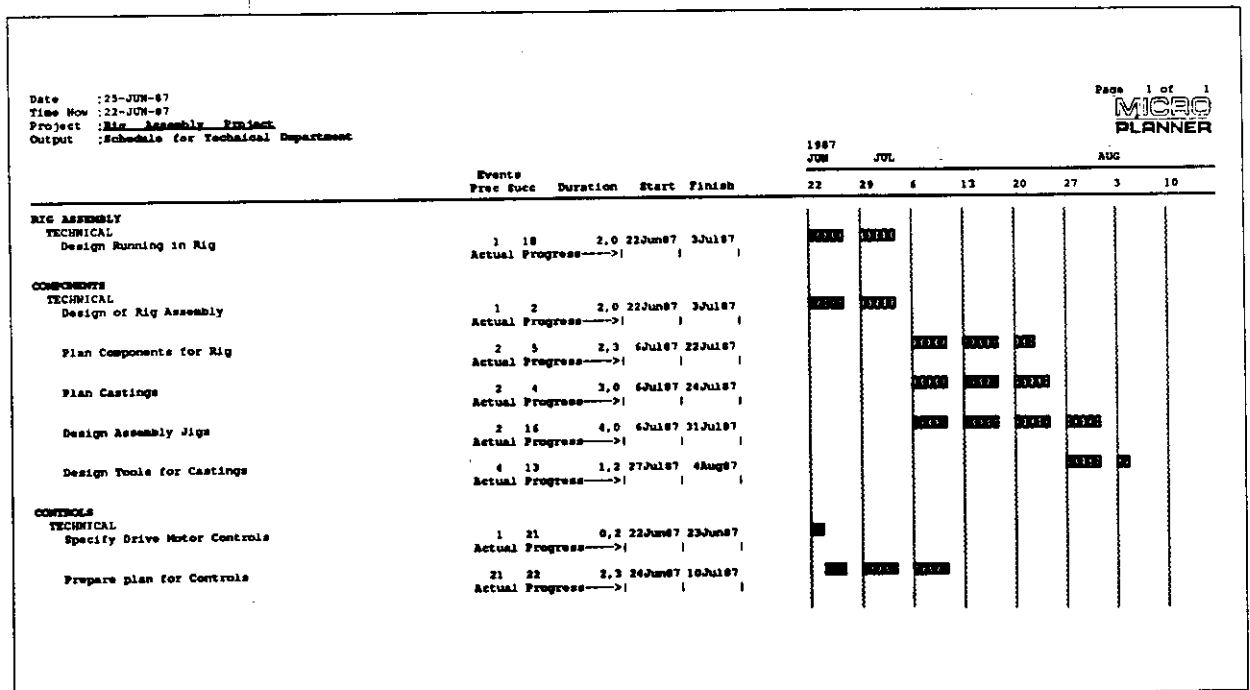
Print and assemble the final barchart as described in Appendix A. This chart, along with printed histograms, forms the master schedule for your project.

You can also prepare charts for each zone, for particular responsibilities or for selected resources. It is more acceptable to hand schedules to subcontractors which detail only their operations.

Store the Resource Analysis results in the Master Archive before you run any other simulations or updates. We would also recommend that you take backup copies of your project document at this time as described in the next chapter.

When the project starts, you can concentrate on those operations which must be carried out in the near future by using Short term schedules (rather than full sized barcharts).

To ensure that the relevant information reaches each member of the project team, you may issue customized Short term schedules which detail only those operations in which they have an interest.



Costings

You may obtain costing data from your project by including the following information:

Resource Costs

For each resource, enter its value in the same window you used when entering availability. Print a histogram selecting 'Cost' instead of 'Usage' to see the costs for a particular resource. Histograms only generate costs *after* Time Now.

Fixed Costs/Activity

If operations carry certain fixed costs, you can add a further resource called 'Fixed Costs' and enter the totals used against particular activities.

Overheads

As a project takes longer, fixed overheads cost more. Use hammock activities to span the events where overhead expenses start and finish, then enter usage of overheads.

For example, suppose that a piece of equipment must be hired for part of the project. Insert a hammock activity which starts when the equipment must be hired and finishes when the equipment can be released. A resource 'Equipment' can be entered against the hammock and the cost will be calculated.

Total Costs

Print a histogram selecting 'Total cost' to see the total expenditure on all resources.

Cost Reports

Print a Cost report to show the cost breakdown of the activities based on current resource levels with hammocks costed according to their duration in the selected schedule. Cost reports can include activities prior to Time Now.

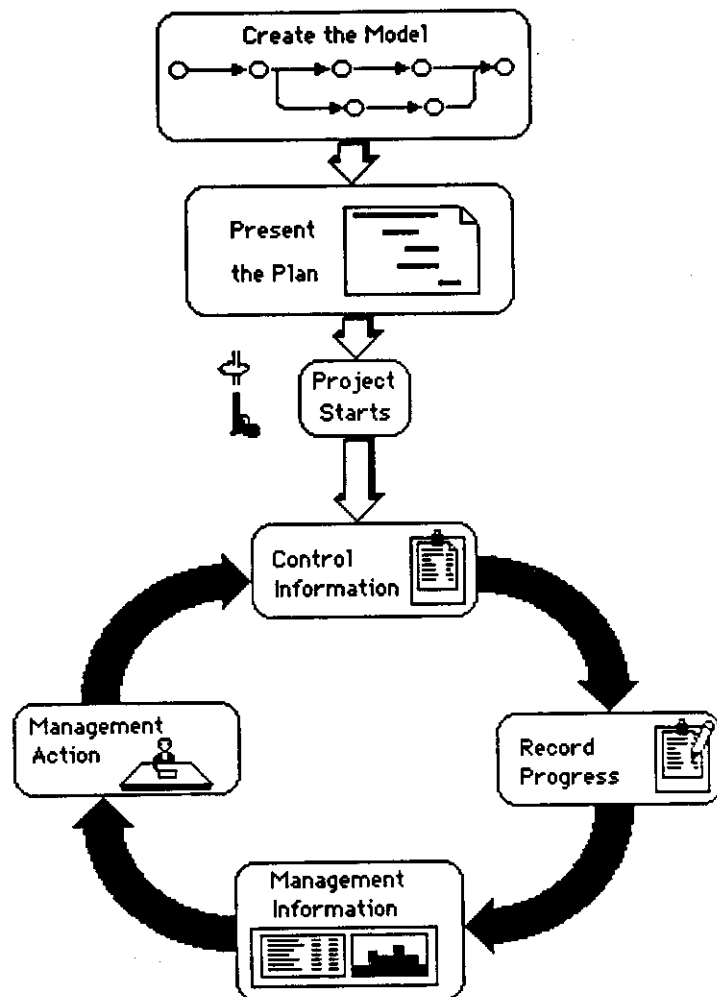
Additional Cost Manipulation

For further analysis of the cost results generated by Micro Planner, transfer them (via the Clipboard) to other applications such as Microsoft's Excel® or Jazz™ by the Lotus Development Corporation.

This process is explained in Appendix D.

The Monitoring Cycle

Once the project has started, the role of Micro Planner changes from planner to manager. The more important function of the software now commences - to keep your project on track for a satisfactory completion.



To manage the project effectively we recommend that you update at regular intervals. These updates involve the following operations:

1. Recording Progress

The Short term schedule report has spaces for you to record actual start and finish dates. Progress can be recorded on the report by any member of the project team and returned to you.

2. Management Information

Having collected the progress data, set the relevant date for Time Now and enter the information to update the network model.

Do a Resource Analysis and print a Progress report using Resource Analysis as the current schedule and Master Archive as the old schedule.

Print or display the revised resource histograms. If your project has been delayed, use the Supercritical report to highlight the delay paths which affect your deadlines.

3. Management Action

Progress reports are used for comparing performance against the planned schedule. You can print reports selecting specific Zones or Responsibilities thus pinpointing the source of your problems.

Armed with all this information, you can take management decisions and actions. You can either overcome the damage done to your schedule or forecast the unavoidable delays to your deadline.

The options open to you will be similar to those which you encountered in creating the model initially.

- a) Can durations be shortened?
- b) Is the logic really correct?
- c) Can activities overlap with previous or following activities?
- d) Are the deadlines really attainable?

Note: You also have the option of shifting all operations on the supercritical path onto a calendar which has more days. This means, of course, that you could put the most urgent operations (and only the most urgent operations) onto a longer working week. I bet you had not thought of that!

Don't forget to look at revised histograms to establish whether any resource problems lie ahead.

Multiple Calendars

This process may involve a number of simulations to establish the best possible solutions. A word of caution - it is safer to carry out simulations on a copy of the project document in case you make changes which you would prefer to undo.

The end result of this process will be a revised schedule which you can leave on the Resource Analysis schedule or place in the Interim archive.

4. Control Action

Once you have decided on the revised plan of action, all that remains is to communicate the modified plan to the project team.

Print a Short Term Schedule using the latest solution as the 'Current' schedule. You can also select the Master schedule as the 'Old' schedule to illustrate the changes which have taken place.

Issue the new schedules to the project team and the cycle starts over again.

Finally, don't underestimate the power of multiple calendars.

The more obvious uses of multiple calendars are where different groups within the project team may work to a differing weekly cycle or take differing vacations.

You could, for example, allocate a special calendar for a key person and blot out those days when he is occupied on unrelated work or when he goes on vacation.

Some projects may be punctuated by board decisions, in which case, a delay which misses a boardroom presentation by just one day could mean a long wait until the next meeting. To forecast such delays, specify a weekly cycle with no working days at all then go through the calendar putting in working days for the dates of the board meetings.



7

Projects in Action

7

Projects in Action

Why Progress?

Once a project has been planned and work is in progress, Micro Planner's job is not over. Effective management calls for constant monitoring of the project and the need to assess progress.

This chapter examines the requirements for keeping your project up-to-date. First, there is a section on looking after your project documents. The chapter then goes on to look at the techniques involved in progressing and modifying your project once it is up and running.

The previous chapter explained the management control cycle. This chapter looks at how you update a project.

Safeguarding Data

Any updating of your project involves alteration to your network model. Before you start making these changes, have a look at this section which is concerned with looking after your project documents - we call it housekeeping.

Saving Your Project

Before leaving Micro Planner or moving on to another project, you need to save the current project on disk.

Either,

To save the changes made to an existing project:

■ Choose **Save from the File menu**.

Or,

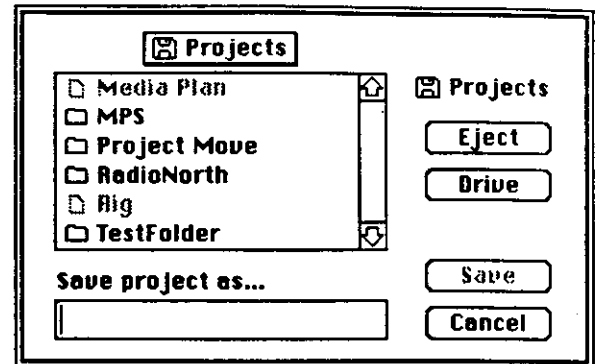
To save an Untitled project or an existing project under a different name without replacing the previous version:

■ Choose **Save As from the File menu**.

When you choose Save As a dialog box appears:

■ **Type a name for your project in the space provided.**

You may save the project on any disk - the name of the current disk is displayed above the Eject button.



You may now save your project in one of three ways:

1. On the current disk.
2. On an unused disk.
3. On an existing disk.

Choose one of these options and turn to the relevant section.

1. Saving on the Current Disk

At the top of the dialog box is the name of the current directory together with a disk or folder icon.

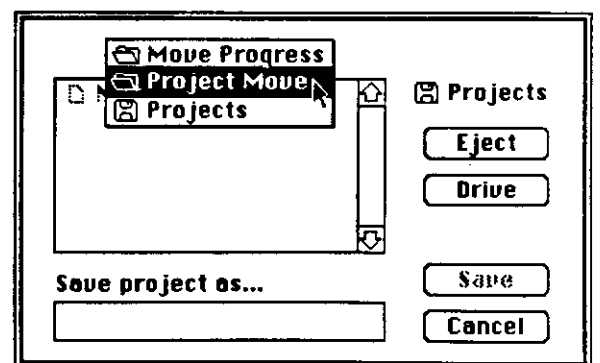
If the directory name has a folder icon...

■ **Click the directory name.**

If there are any folders which are higher in the file hierarchy, they appear on a pull down menu.

If you want to move to one of those folders...

■ **Drag and then release the mouse button to open the highlighted folder.**



In the list below the current folder name, all other folders inside the current folder (at a *lower* level in the hierarchy) appear as bold names.

- Double click the folder name if you want to open one of these lesser folders.

Note: If the named disk is initialized one-sided, the directory list does not include folder names and your project is saved at the top level of the folder hierarchy.

Once you have opened the required folder:

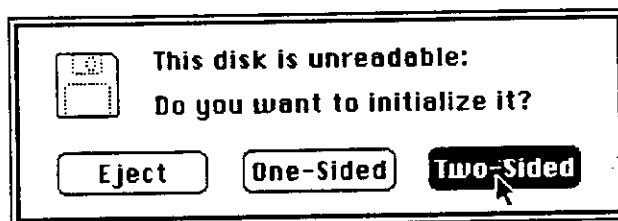
- Click the Save button and your project is put away.

2. Saving on an Unused Disk

You may need to replace a disk like this:

- Click the Eject button to remove an unwanted disk.
- Insert the new disk into the disk drive.

If the disk is already initialized for a *Macintosh* its name appears above the Eject button. If it is not, this message appears:



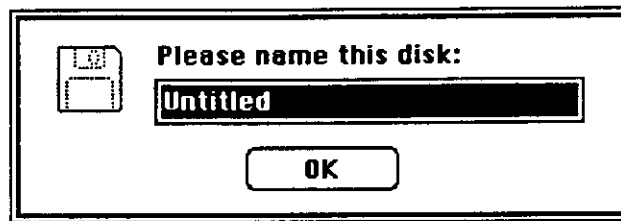
Initializing a disk removes everything on it and makes it into a blank *Macintosh* disk. So if there is anything on the new disk that you do not want to lose then...

- Click the Eject button and find another disk.

Otherwise,

- Click Two-sided or, If you are initializing a single-sided (400K) disk, click One-sided.

The system asks for a name for the new disk:



- Type a suitable name in the space provided.

- Click OK.

When the name of the initialized disk appears above the Eject button you are ready to save the project.

- Click the Save button and your project is saved onto the new disk.

If you have ejected the disk containing the project, then a series of messages appear asking you to alternately insert the disk you are copying from and the disk you are copying to.

3. Saving on an Existing Disk

You may need to replace a disk with a new one, to do this:

- Use the Drive button to display the name of the disk to be ejected.

- Click the Eject button.

- Insert the disk that is to receive the project.

As explained in the section *Saving on the Current Disk*, unless the disk has been initialized one-sided, a list of the folders on this disk appears in the dialog box.

- Open the appropriate folder then click the Save button.

A message appears if there is not enough room on this disk to store your project, in which case:

- Click the Eject button and find another disk.

Backing Up Files

Once stored on disk, your project data is safe - provided, of course, that the disk can survive the common hazards of life like being trampled underfoot or drowned in coffee - hard disks are not immune either.

Naturally, you do not want to lose your project. For this reason, we advise you to make *backup* copies of your project and this is how:

- From Micro Planner, choose **Quit** from the File menu to return to the *Macintosh* Finder.

- Find your project by looking in the windows of the appropriate disk (this may mean opening the disk icon or folder icons first).

If you have carried out a Resource Analysis, your project will consist of two documents - the project file and a **Hist** file. This second document contains all the data required to generate your resource or cost histograms.

No real harm is done if the Hist file is lost as the histogram results can be regenerated by carrying out another Resource Analysis. In order to keep the project intact you should copy both documents.

To take a copy, you need the *source* disk containing the project document(s) and the *backup* disk.

If you need to eject a disk:

- Click the icon for the disk to be ejected.

- Choose **Eject** from the File menu.

The next step is to insert the backup disk - this can be any disk you choose provided it has enough space to store the project.

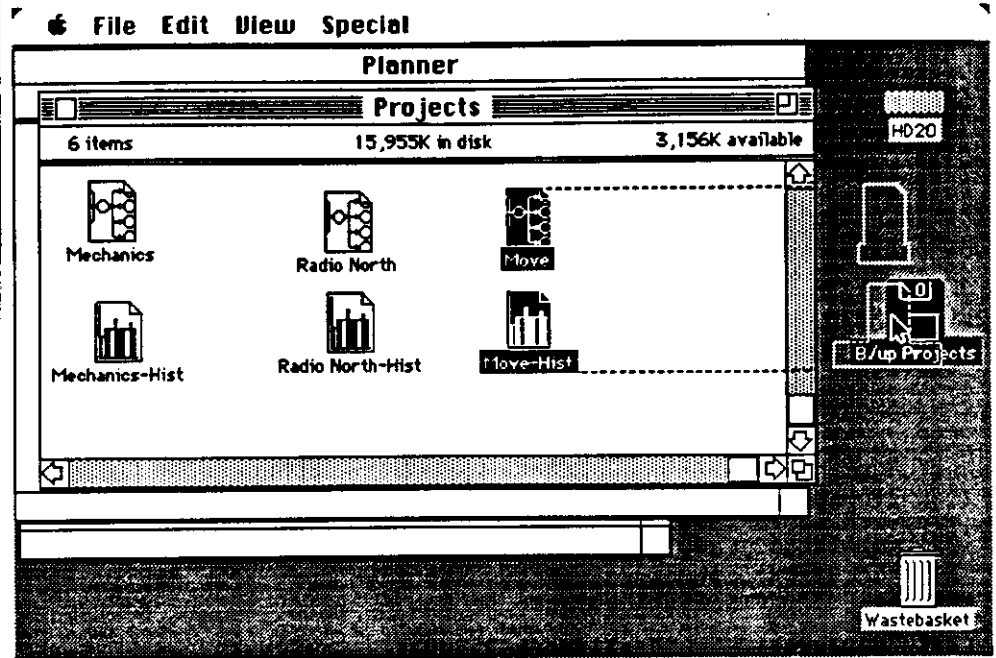
- Insert the backup disk in the disk drive and, if appropriate, initialize and name it.

- Open the disk and/or folder containing your project.

- Click the project icon and...

- ... If you have a Hist file, hold down the **SHIFT** key and click that.

- Drag the outline(s) of the document(s) to the icon of the backup disk or its directory window.



A message appears while the project is being copied on to the backup disk.

Finally, when backing up a project document you may want to give it some identification to differentiate it from other backups. Prefix it with the date perhaps.

- Click the project icon and type the new name.

Or,

- Edit the icon's name in the usual *Macintosh* fashion.

Note: If you rename copies of the project files, make identical changes to the corresponding Hist file names otherwise they will not match up with the project later on.

Opening Another Project

Deleting Project Files

Sooner or later, you will want to dispose of obsolete projects but first...

- Ensure that the project files are no longer wanted.

To dispose of any file:

- Click the file icon and drag it to the Trash can (or, on some systems, the 'Wastebasket').



The Trash can turns black.

- Release the mouse button.
- Choose Empty Trash from the Special menu.



When you want to open another project, you can do it in one of two ways - from the Finder or, if more convenient, from within Micro Planner itself.

1. From the Finder

If you are at the desktop, you can open another project like this:

Either,

- Click the project icon.
- Choose Open from the File Menu.

Or, taking the short cut,

- Double click the project icon.



2. While working in Micro Planner

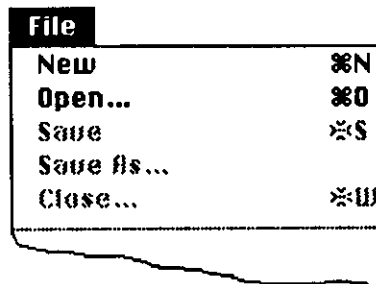
If you are in Micro Planner and have finished working on the current project:

- Choose Close from the File menu to close the current project.

If you haven't already saved the changes to your project (as described earlier) then you are now given the option to do so.

If you want to discard any changes you have made then:

- Click the No button.



Otherwise,

- Click the Yes button to save the project on the current disk.

Once the file is closed, you are ready to move on to the next project.

Either, to start up a new project:

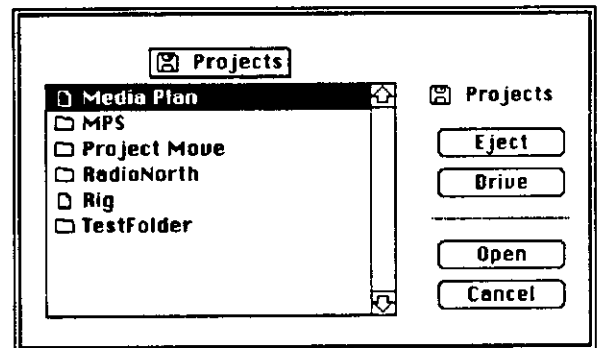
- Choose New from the File menu.

A window appears listing all the projects on the current disk - the name of this disk is displayed above the Eject button.

If the project list extends beyond those shown in the window, use the scroll arrows to see the remaining project names.

Or, to open an existing project:

- Choose Open from the File menu.



If the project you want is on the disk in the other drive then:

- Click the Drive button.

If, however, you need to swap disks then:

- Click the Eject button then Insert the new disk in the drive.

If you are using a external disk drive system, do not eject the Program disk to make room for a data disk as Micro Planner needs the program on the system at all times.

- Click the appropriate project name.
- Click the Open button.

Recording Progress

Once you have taken backup copies of your project, you are ready to update the network model to keep track of progress.

You can collect information from members of the project team - this is always easier if you have used the Short Term Schedule as a progress recording document.

Archive any results if you have not already done so.

To do that:

■ Click on the Analysis menu, drag past Archive Resource analysis... and choose ...to Master.

That, of course, places the Resource Analysis results in the Master archive. Time Analysis results may be archived in a similar way and you can choose the Interim archive in a similar way.

Note: If you place Resource Analysis in the Master archive then you cannot choose to put Time Analysis in there as well because it is the same archive.

The next thing to do is to update the Time Now date.

■ Choose Project Details from the View menu.

■ Double click on the Time Now date to select it.

Time Now:

15-Jun-87

■ Type the new date.

Dates are entered as the DAY (number), MONTH (first three letters) and YEAR (number) like this:

15jun87

Or, like this:

15-jun-87

If only the day or month has changed then you may wish to edit the date in the usual *Macintosh* fashion.

Progress Data

Examine all activities (*including* dummies with durations) that have progressed since the last update. Enter the progress for each of these activities in the following way:

■ Locate the activity.

If you know the event names or numbers associated with this activity (reports show the event names for reference) then choose Move to from the Search menu. Otherwise, the search facility comes to the rescue when you do not have these event names.

Once the activity has been located and centralized:

■ Double click on the activity to open it.

■ Choose Full Details from the View menu if they are not already displayed.

The extra information window appears and you can concentrate on the Progress Information area.

Imposed Dates	Progress Information	Analysis results	
Earliest:	Started :	Resource	Start Finish
Deadline:	Finished :	Archives	29-Jun-87 21-Aug-87
	Balance :	Master	29-Jun-87 21-Aug-87
	Sort Code:	Interim	29-Jun-87 21-Aug-87

Actual Started and Finished Dates

To enter the date when this activity actually started:

■ Move the mouse pointer to the right of Started: and click when the I-beam appears.

■ Type the appropriate date.

You can enter a date as described for Time Now.

The date on which this activity actually finished can be entered in a similar way.

You can also record 'Achieved' dates on special events if required.

When you enter progress dates, remember that activities are expected to start at the beginning of a day and complete at the end of it. This means that if an activity finished yesterday (evening) then the following activity could not, strictly speaking, have started yesterday (morning) as well.

While Micro Planner does not mind if activities progress out of sequence, it does object if you enter a Finished date for an activity which is prior to its Started date.

Notes: If you enter a Finished date but no Started date, Micro Planner assumes a Started date according to the duration of that activity.

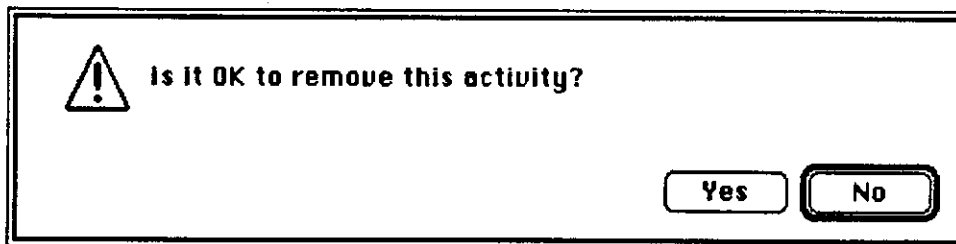
If an activity has a Started date but no Finished date, the program calculates the completion according to the activity's duration. If the calculated completion date is prior to Time Now then Micro Planner assumes that, as you have not reported it as finished, its completion must be Time Now. A completion on Time Now is actually displayed as the day before Time Now.

If you are not concerned with recording progress for future reference then remove completed activities but remember to enter additional Begin events to avoid the resultant dangles.

To remove an activity:

- Double click on the activity to open it.
- Click the Remove button.

Micro Planner asks for confirmation like this:



- Click the Yes or No button as appropriate.
- Click OK.

Remember to correct the network logic for any dangles caused by the removal of activities.

Note: Don't try removing activities and re-entering them. Apart from the additional effort, you will also lose their history of schedules and archives.

Balance Time

When a Started date has been entered, Micro Planner calculates the time between the Started date and Time Now, deducts this from the duration and arrives at the portion of the duration which remains to be completed.

If you prefer to specify the remaining balance you can enter it like this:

■ Double click on the activity to open it.

■ Choose Full Details from the View menu.

The extra information window appears including the Progress Information area.

Imposed Dates	Progress Information	Analysis results
Earliest:	Started :	Start Finish
Deadline:	Finished :	Resource 29-Jun-87 21-Aug-87
	Balance :	Archives
	Sort Code :	Master 29-Jun-87 21-Aug-87
		Interim 29-Jun-87 21-Aug-87

■ Move the mouse pointer to the right of Balance: and click when the I-beam appears.

■ Type the Balance duration.

Do this in the same way as a duration - in weeks and days separated by a comma.

Notes: If Micro Planner finds a Balance duration and no Started date, it assumes that the activity started at Time Now.

If a Finished date is recorded for this activity then the balance time is ignored.

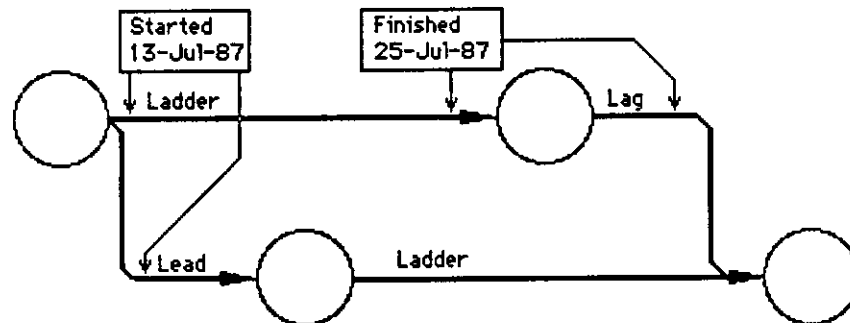
Progress on Ladder Structures

Dummies, leads and lags which do not have progress recorded are assumed to be complete if progress is recorded on the activities which follow them. The Lead and Lag activities associated with ladders can, however, cause problems unless you know what to look for.

Micro Planner does make certain assumptions about the start of leads and lags but if the situation is complex, it may not always recognise the conditions.

Think about the following...

Any activity which does not have progress either entered or assumed must start after Time Now - that goes for leads and lags as well.



These two situations are all you need to be aware of:

1. When you enter a Started date for a ladder, enter the same Started date for any lead events which leave its preceding event.

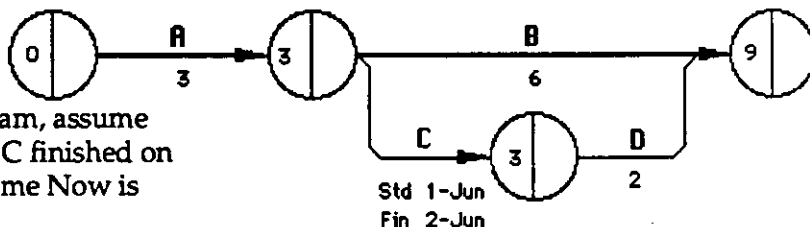
Micro Planner may do this for you but, if neither of you do it, the lead may not start before Time Now and could falsely delay the start of any following operations.

2. When a ladder type activity finishes, enter the same Finished date on any lags leaving the succeeding event (unless there are other ladder activities entering that end event which are not complete).

Once more, if neither you or the program do this then the activities following the lag may be falsely delayed.

Out of Sequence Data

Micro Planner can handle progress on activities which is not in date order. This means that, if the activities in the project progress out of sequence, there is no need to go back into the model and change the logic. Let's examine this feature in more detail:



In this diagram, assume that activity C finished on 2-Jun and Time Now is the 3-Jun.

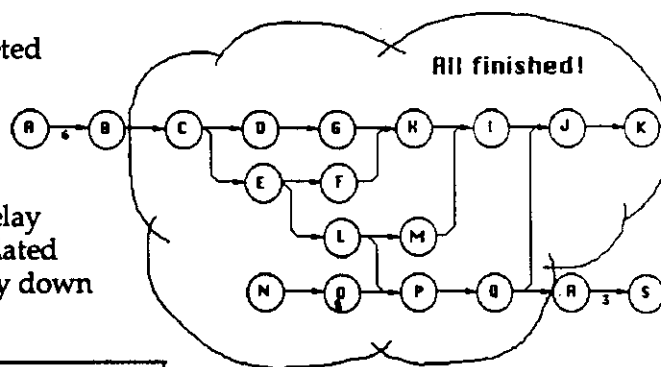
Micro Planner does not assume that activity A has been completed. It does, however, maintain the logic link through activity C like this:

June											
1	2	3	4	5	6	7	8	9	10	11	12
		A									
					B						
C											
					D	Starts after A					

Activity C is, of course, completed. Activity A, unaffected by the completion of C, takes 3 days as usual. Activity C acts as if it is a dummy and maintains the link between activities A and D. So activity D does not commence until after A is completed although C is actually finished.

A word of caution!

Whole strings of completed activities can act as dummies in this way thus causing an unprogressed activity (in this case, $A \rightarrow B$) to delay another seemingly unrelated activity ($R \rightarrow S$) some way down the line.



October											
1	2	3	4	5	6	7	8	9	10	11	12
A → B											
						R → S					

Making Modifications

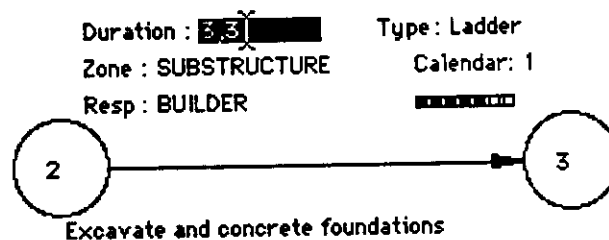
Having examined your Progress and Supercritical Activities reports and made the necessary management decisions, you may need to make a few changes to the model.

Changing Durations

When you want to alter a duration do this:

- Double click on the activity to open it.
- Move the mouse pointer into the Duration: area.

A vertical cursor appears.



- Double click the existing duration to select it.
- Type the new duration.

That is not the end of the story because this activity may use resources.

- Choose Resources Used from the View menu.

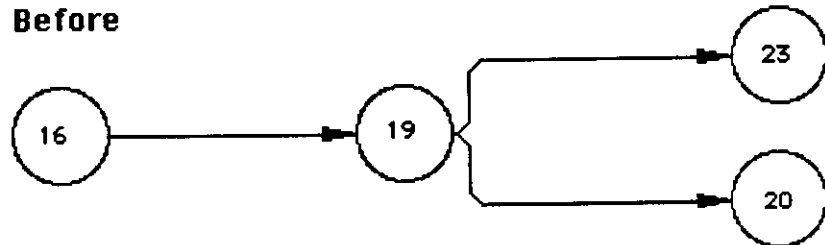
If there are resources, check that the Start and Finish times are now compatible with the *new* duration. If a duration has been increased, you may have to alter the 'Per day' resources.

Note: When you change the duration of a ladder type activity, examine the lead and lag activities entering and leaving the activity to make sure that their durations are compatible with the new duration.

Changing Logic

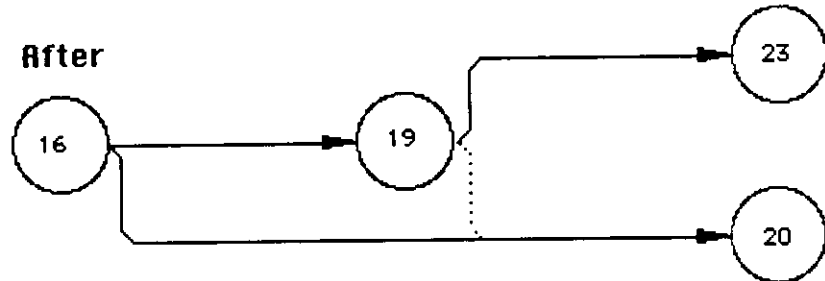
If you have examined the logic and find that modifications are required then re-link activities like this:

Before



In this example, let's say that you want to re-link activity 19→20 so that it commences at event 16.

After

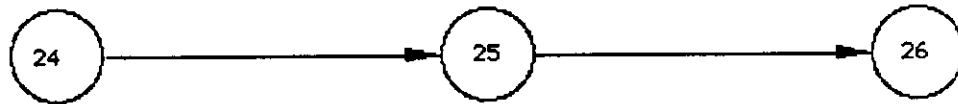


- Open activity 19→20 in the usual way.
- Move the mouse pointer into the left hand circle and, when the I-beam appears...
- ...double click on the existing event name to select it and type 16.

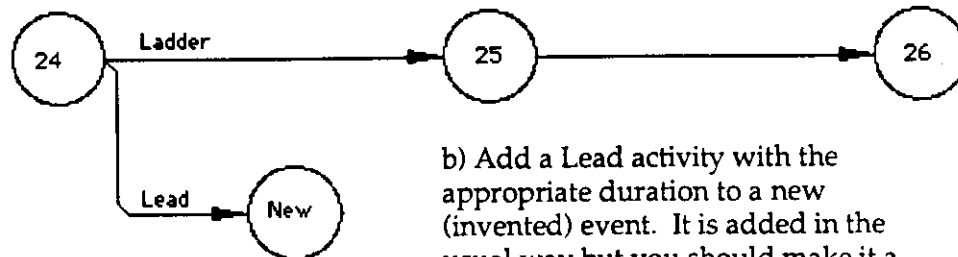
Note: If activity 19→23 were not there, this change would cause a dangle at event 19. Under these circumstances, you could re-link 19 to another event in a similar way.

Introducing an Overlap

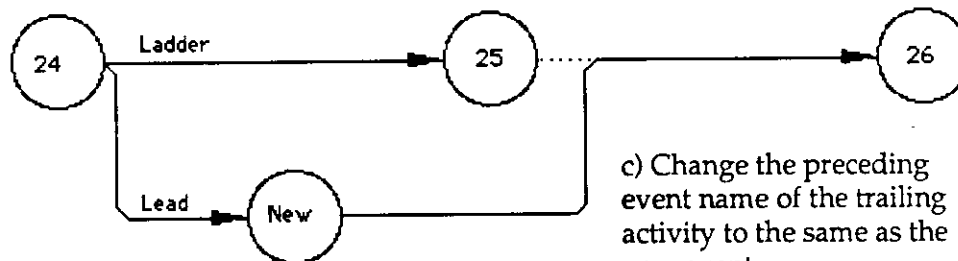
Where you decide that two activities can overlap, introduce the overlap like this:



a) Make the leading activity into a ladder type.

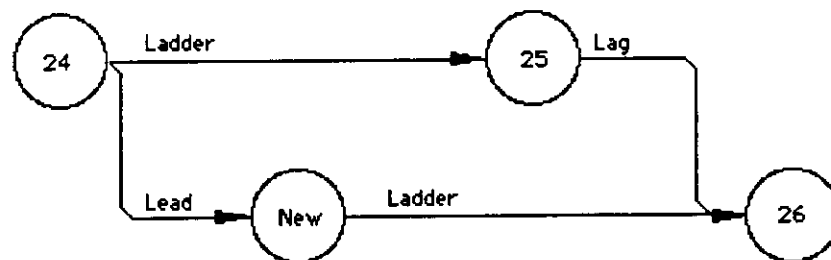


b) Add a Lead activity with the appropriate duration to a new (invented) event. It is added in the usual way but you should make it a Lead type.



c) Change the preceding event name of the trailing activity to the same as the new event.

d) Make the trailing activity into a Ladder type.



e) Add a Lag activity with the appropriate duration linking the succeeding events. Do this in the usual way but make the activity a Lag type.

Where you need to change the calendar that an activity obeys, do this:

Duration : 3 Type : Normal
Zone : FINISHINGS Calendar: 1
Resp : BUILDER 

 ————— 

Interior finishings and decoration

■ Click OK.

Note: When you change a calendar, durations are re-displayed in terms of the new calendar. The number of days in the duration does not change. Therefore, it is not necessary to make the same checks on resource usage that you did when changing a duration.



Appendixes,
Glossary
and Index



Appendix

A

Assembling Charts

Micro Planner produces three charts which can be quite large - barcharts, network and histograms.

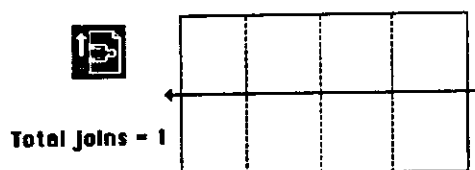
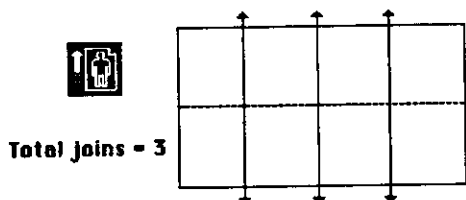
These can consist of many separate sheets of paper and, therefore, a few finishing touches are required to improve their final presentation. This involves trimming and joining the printed sheets generated by an Imagewriter printer or joining the individual pages from a Laserwriter.

If you are using a printer with continuous paper feed, you can simplify the assembly of each type of chart as follows:

- When printing histograms, the vertical axis automatically scales to the width of one page. This means that by selecting the icon to print sideways and 'No breaks between pages' from Page Setup, each histogram is printed as a continuous strip thus avoiding the need for trimming and joining altogether.



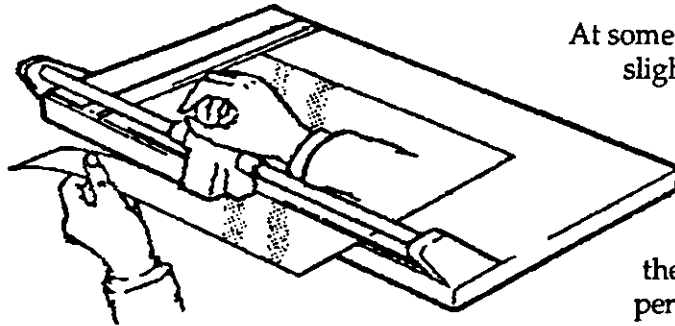
- For networks, you can also use paper orientation to keep the amount of trimming and joining to a minimum. From the screen preview, look at the paging of the network by choosing Reduce to Fit from the View menu and then clicking the Pages button. If you do this for both printing sideways and across the page, you can see which of these two selections will involve the least number of joins.



- Similarly, use the screen preview of barcharts to see whether printing sideways or across the page produces the best results. Furthermore, if you select 50% reduction in Page Setup and then select different fonts and font sizes, it may be possible (by effectively increasing the number of lines of text per page) to replace the horizontal page breaks with separate headed sheets which do not require any joining.

Trimming

For continuous stationery, we recommend that you use a paper cutter with as long a cutting edge as possible.

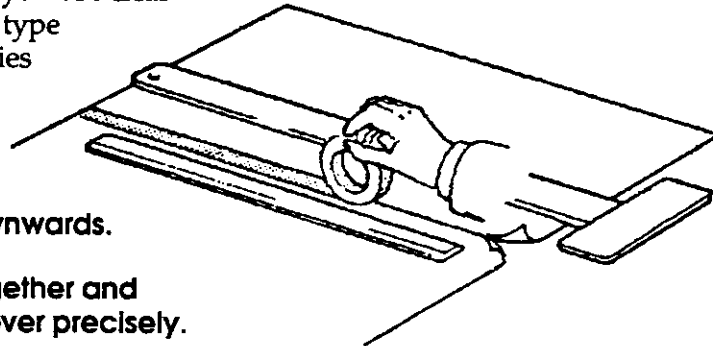


At some junctions there may be a slight overlap, in which case always trim the sheet to form a *butt joint*.

If a strip is longer than the paper cutter, fold at the perforations and then line up precisely before cutting.

Joining

To avoid eventual shrinkage and wrinkling, we recommend that you use clear mending tape of the type used on transparencies rather than plain Scotch Tape.



■ Turn both sheets of paper face downwards.

■ Butt the joints together and line up any cross-over precisely.

■ Weigh down both sheets (preferably with long rulers or T-squares) to avoid premature adhesion of the tape to the paper.

■ Apply the tape along the join taking care to steer a straight course. Avoid kinks in the tape or paper.

Transparent Paper

When transparent continuous stationery is used, you can copy the resultant charts using standard dyeline or similar processes.

Transparent paper is not as absorbent as conventional paper and you could find that the type will smudge even a long time after printing.

Always test your printer using a sample of transparent paper before you purchase the paper. Some ribbons create an image which will actually spread causing illegible blobs.

Appendix

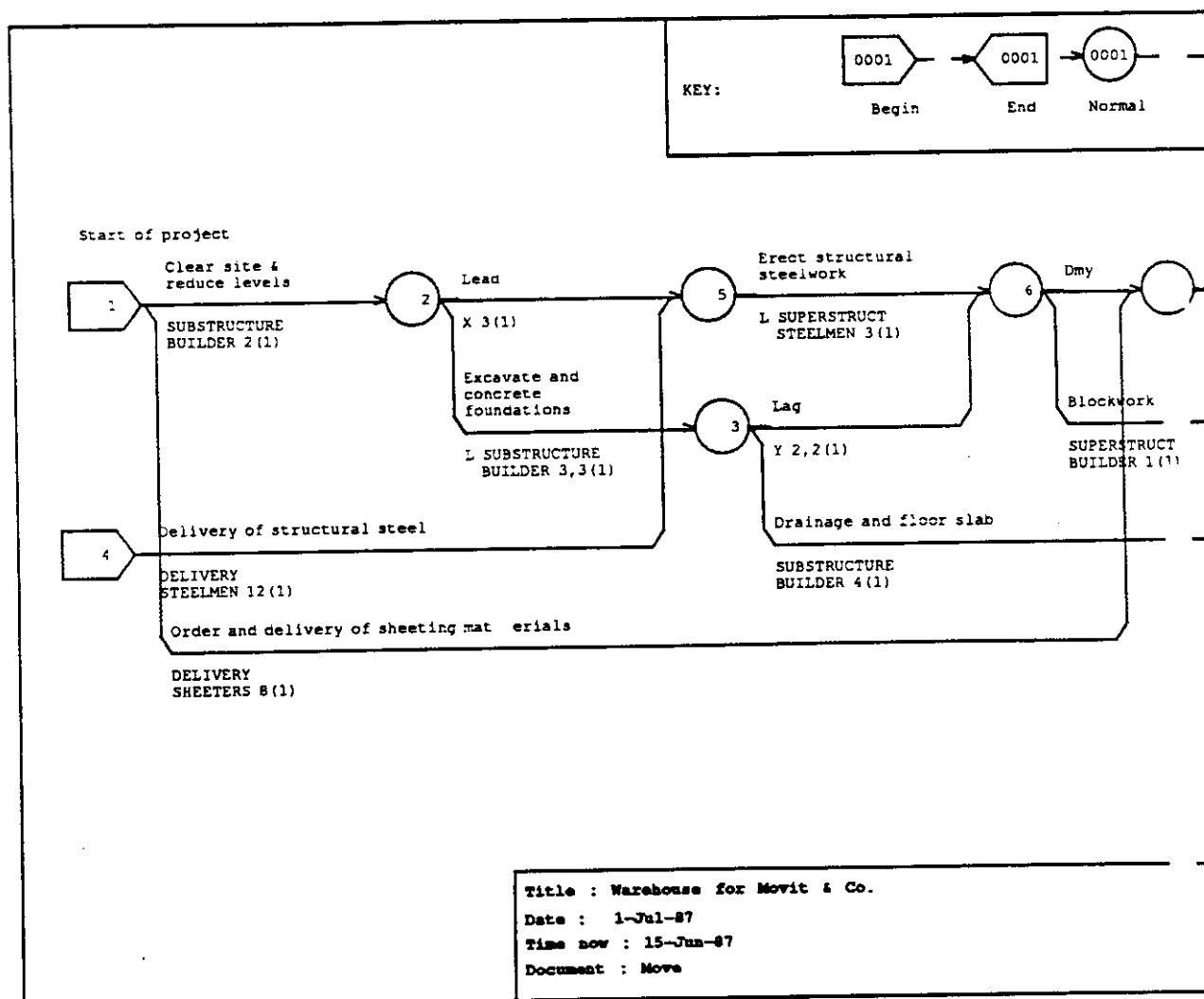
B

Test Project

Try assembling this project as a working example.

■ Enter the network from the diagram, you don't have to use our event names.

■ Add holidays if you wish and use a 5 day week.



If you do not have the energy to enter all the logic, the data is supplied with your copy of Micro Planner - it is a project called MOVE. Take a copy of it and work on the copy in case you want to return to the original model later.

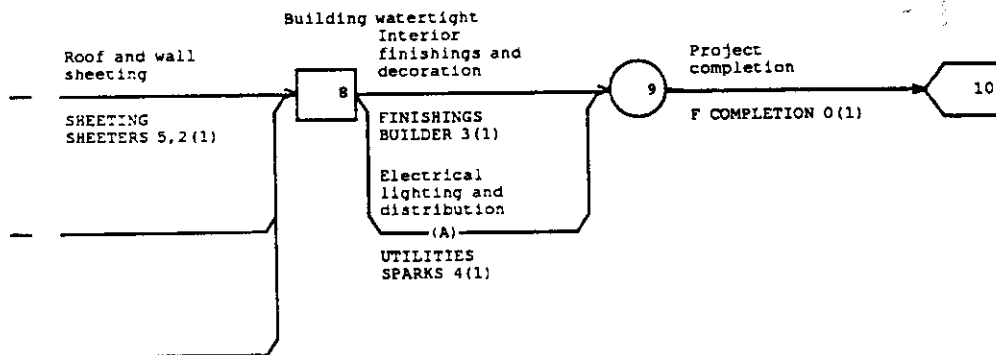
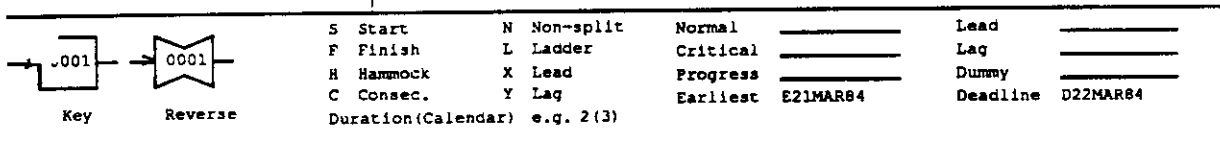
Notice that:

Events 1 & 4 are 'Begin' events.

Event 10 is an 'End' event.

Activity 9→10 is a Finish Flag.

There is a Ladder structure - don't forget to specify the Ladder, Lead and Lag types.



**MICRO
PLANNER**

Assume that:

Event 1 cannot start until a week or so after Time Now.

■ Enter the earliest date for event 1.

Activity 4→5 has already started - four weeks before Time Now.

■ Enter the started date for activity 4→5.

■ Set up these Zone labels:

A - Delivery
B - Substructure
C - Superstruct
D - Sheeting
E - Utilities
F - Finishings

■ Devise your own Responsibility labels.

■ Time Analyze the model and print the resulting Time Analysis barchart.

Resources:

■ Enter the resource 'Operatives' (Normal type) using Resources Available from the View menu.

■ Give the resources a meaningful value and assume that there are 3 available from Time Now and 6 available from 3 weeks later.

■ 'Use' the following resources:

'Excavate and concrete foundations' requires 3 operatives per day for its first week and 5 per day for the remainder.

'Drainage and floor slab' requires 6 operatives per day.

'Erect structural steelwork' requires 6 operatives per day.

'Blockwork' requires 6 operatives per day.

■ Do a 'Time Critical' Resource Analysis, and store the Resource Analysis results in the Master Archive.

■ Print your Resource Analysis barchart and the histogram of Operatives Usage and Cumulative cost.

Progress:

- **Fix a deadline on the project completion on the date that it completed in the previous analysis.**

Assume that time has moved on about 4 weeks.

- **Alter the Time Now accordingly.**

You have the following problems:

1. The 'Blockwork' activity can only work on Saturdays. So set up a calendar which only has Saturdays and amend the blockwork activity so that it uses that calendar.
2. 'Clear Site and reduce levels' started on the date originally scheduled and finished a couple of days before the new Time Now.
3. Sheeting materials were ordered on time and are expected to arrive on time - that means that the operation 'Order and delivery of sheeting materials' has started on the original date.
4. Delivery time for Structural steel is expected to increase by 2 weeks to 14 weeks.
5. 'Foundations' have not started and are now expected to take 5 weeks instead of the original 3.3. Don't forget to modify the resource usage start and finish and don't forget to modify the Lead time accordingly.

- **Re-analyze both Time and Resources and list the 'Supercritical activities'.**

- **Print the 'Progress Report' using Resource Analysis as the Current schedule and Master archive as the Old schedule**

Now you are on your own!

- **Take any action that you see fit to try finishing on time.**

- **Do a Resource Analysis to arrive at the revised situation.**

- **Print a 'Short Term Schedule' using Resource Analysis as the current schedule and Master archive as the Old schedule. Look at your histograms to see what has happened to your resources.**

Use this project as a basis for further experiments.

Appendix

C

Copy Reports to MacDraw™ File

When you have to make special presentations of Micro Planner reports, it is nice to decorate them with additional information. You may want to highlight particular dates, put a border around the report or add your company logo. This work can be done in the application MacDraw™ or other applications which accept PICT documents.

You can transfer any Micro Planner report to a MacDraw™ file like this:

- Open Micro Planner in the usual way and open the required project.

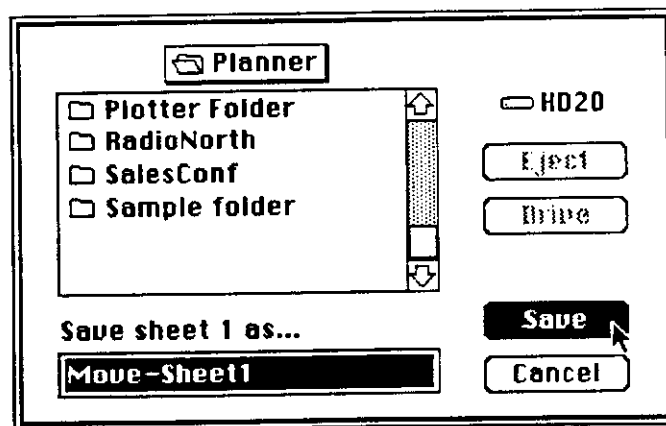
- Using the Report menu and options, produce the required report on the screen.

- Choose Copy Report to MacDraw™ File from the File menu.

This box appears - it looks and operates like the routine for saving a project.

- Use the Drive and/or the Eject buttons to position the correct disk in a drive.

- If appropriate, move through the hierarchy of folders and select the folder you want to save the document.



- Type a new name for the document if the preset name is not appropriate.

- Click Save to save the document.

Note: Networks and histograms are saved as single drawings. Other reports are saved one sheet at a time. This means that a barchart which comprises 4 sheets prompts you for 4 document names and produces 4 MacDraw™ documents.

The documents you have produced are ready for use by MacDraw™.

- **Open MacDraw™ .**
- **Open the saved document(s) as usual.**
- **Use MacDraw™ in the usual way.**

These diagrams are produced so that each line, circle and string of text is a different MacDraw™ component. This means that you can move, reshape, erase or resize any individual components. You may also group these components using the MacDraw™ Group command.

MacDraw™ recognizes text in these diagrams as text so it may be edited or subjected to font or style changes. For example, you could change particular activity descriptions to Bold or Italic.

I could go on, the possibilities are many and varied. The MacDraw™ documentation details all its facilities and these will give you ideas on customizing your Micro Planner reports.

Finally, when printing reports you can replace the Micro Planner logo with one of your own creations - your company name or logo, perhaps. Appendix G explains how to generate a logo directly from Micro Planner.

Notes: Micro Planner reports, especially networks, can become very large. You may, therefore, attempt to save a file which is either too large in actual area or contains too many components for MacDraw™ or other drawing applications.

Your drawing application may not be able to cope with a report which contains a custom logo as this has a drawing within a drawing.

Appendix

D

Copy Histogram Data to Clipboard

If you want to do further analyses with your resource usage results, it is possible to transfer the information to other applications, for example, Microsoft's Excel® or Jazz™ by Lotus Development Corporation.

The data is transferred by means of the system clipboard and this is how you do it:

- Open Micro Planner in the usual way.
- Choose Histogram data to Clipboard from the File menu.

Note: If that option is ghosted on the File menu it means that there is no current set of histogram results. To create a new set of results, carry out a fresh Resource Analysis from the Analysis menu. This analysis will, of course, renew the Resource Analysis results on each activity as well as renewing the histogram results.

This box appears:

The dialog box is titled "Transfer histogram data to clipboard:". It contains the following elements:

- A label "Resource to use" followed by a button labeled "None selected".
- A label "Start date" followed by a text box containing "15Jun87".
- A label "End Date" followed by a text box containing "16Jun87".
- A checked checkbox labeled "Empty clipboard before transfer".
- At the bottom, two buttons: "Cancel" and "OK".

Next to 'Resource to use' you will see 'None selected'.

- Click 'None selected'.

The available Resources window appears.

■ Click the required resource.

Now you can select the date range that you want to examine.

■ Type the first date to be considered in the Start Date box.

(It is preset to Time Now.)

■ Type the last date in the End Date box.

Dates are entered in the form shown by the preset date.

The program preselects the option 'Empty Clipboard'. This means that the current contents of the Clipboard are replaced by the selected resource.

However, by deselecting 'Empty Clipboard' the information already stored in the Clipboard is retained and the resource selection is *added* to it. This means that several resources, selected one after another, may be placed in the Clipboard at once.

Note: If you do not want all your resources together in a bunch, you can place the contents of the Clipboard into the system Scrapbook after each resource selection (choose Scrapbook from the Apple menu). You can retrieve them later, one resource at a time.

If you are placing a single resource or the first of several resources, it is safer to empty the Clipboard in case there is unwanted information in there.

Otherwise, to retain the Clipboard contents:

■ Click the 'Empty Clipboard' check box so that the cross disappears.

■ Click OK.

If appropriate, repeat the above procedure to select the next resource.

Resources Available	
A	N
B	O
C	P
D Draughtsmen	Q
E	R
F	S Steelmen
G	T
H	U
I	V
J	W
K	X
L Operatives	Y
M	Z

Cancel

Now, without powering down or shutting down the *Macintosh*, quit from Micro Planner and open the application to which the information is being transferred.

The stored information may be retrieved by choosing Paste from the Edit menu.

As an example, this is how you would transfer the information to a typical spreadsheet application:

- Choose Save or Save As from the File menu to save your project.
- Choose Quit from the File menu to leave Micro Planner.
- Eject the Micro Planner Program disk.
- Insert the program disk for the spreadsheet application.
- Open the spreadsheet disk.
- Open the spreadsheet program.
- Move to a cell which will be the top left of the block of information.
- Choose Paste from the Edit menu.

Worksheet 1						
	A	B	C	D	E	F
1	Resource	Date	Used	Available	Value	
2	Operatives	15-Jun-87	0	3	180	
3		16-Jun-87	0	3	180	
4		17-Jun-87	0	3	180	
5		18-Jun-87	0	3	180	
6		19-Jun-87	0	3	180	
7		20-Jun-87	0	3	180	
8		21-Jun-87	0	3	180	
9		22-Jun-87	0	3	180	
10		23-Jun-87	0	3	180	
11		24-Jun-87	0	3	180	
12		25-Jun-87	0	3	180	
13		26-Jun-87	0	3	180	
14		27-Jun-87	0	3	180	
15		28-Jun-87	0	3	180	
16		29-Jun-87	0	3	180	
17		30-Jun-87	0	3	180	
18		1-Jul-87	0	3	180	
19		2-Jul-87	0	3	180	

The values from your project will be emptied into the spreadsheet model - the diagram on the previous page shows the information pasted into Excel®. Do not be too concerned if the pasting process takes quite a while before displaying the table of values.

The Micro Planner information grows rightwards and downwards from the highlighted cell. It occupies five columns.

Note: You may have too many rows, particularly if you have selected a number of resources and a large date range. Differing applications will react differently to such a problem.

Appendix

E

Network Information to Clipboard

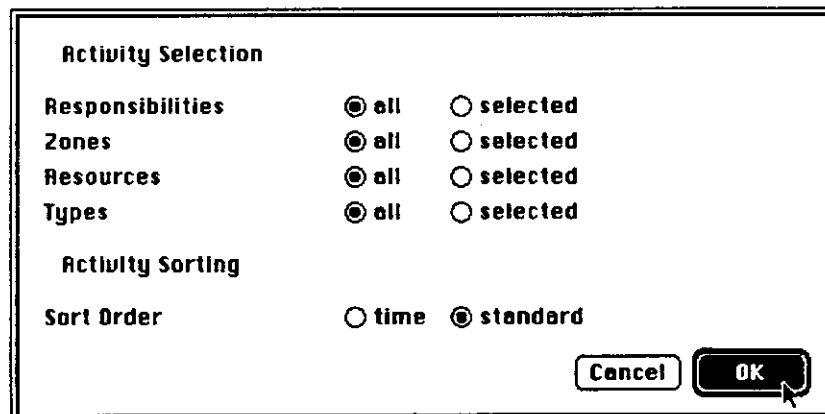
This process is similar to that described in the last appendix. It is designed to take all or selected activity records from Micro Planner and put them into the system Clipboard. You can then paste them into other applications which accept Clipboard entry.

A typical use of this facility may be to paste the full activity records into a database application in order to prepare reports to a format which is not in Micro Planner's repertoire.

This is how you do it:

- Open Micro Planner in the usual way.
- Choose Network data to Clipboard from the File menu.

You can select those activities which you want to transfer.



The dialog box titled "Activity Selection" contains two sections. The first section, "Activity Selection", lists four categories: Responsibilities, Zones, Resources, and Types. Each category has two radio button options: "all" (which is selected) and "selected". The second section, "Activity Sorting", has a "Sort Order" label with two radio button options: "time" and "standard" (which is selected). At the bottom right of the dialog are "Cancel" and "OK" buttons, with a mouse cursor pointing at the "OK" button.

Activity Selection		
Responsibilities	☒ all	☐ selected
Zones	☒ all	☐ selected
Resources	☒ all	☐ selected
Types	☒ all	☐ selected
Activity Sorting		
Sort Order	☐ time	☒ standard
		Cancel OK

■ Make your selection as described for reports in Chapter 5 of this manual.

■ Click OK.

To send every category of information from Micro Planner to the Clipboard may result in a lot of unwanted information. You may now, therefore, select those categories of information which are needed. This box appears:

Transfer the following information for each activity:

☐ Preceding Event	☐ Total Float
☐ Succeeding Event	☐ Free Float
☐ Unique ID	Dates:-
☐ Duration	☐ Deadline
☐ Calendar	☐ Earliest
☐ Description	☐ Started
☐ Type	☐ Finished
☐ Zone	☐ Time Analysis
☐ Responsibility	☐ Resource Analysis
☐ Sortcode	☐ Master Archive
☐ Balance	☐ Interim Archive

Resource Usage entries to transfer

All the available categories of information are displayed with a corresponding check box. The check boxes which refer to Resource Analysis or Archives enable you to select both start and finish dates for those schedules and the Time Analysis check box selects Early and Late Dates.

■ Click the required check boxes to specify which categories of information you wish to transfer.

If you would like resource usage to be transferred you may enter the number of resources which the system selects. For example, if you were to type 1 then only the first resource of an activity would be selected.

■ Type the quantity of resources to be transferred.

■ Click OK.

The information is now transferred to the system Clipboard.

Note: On larger projects there may be too much information for the Clipboard to handle particularly when a lot of categories of information are selected. If this happens, you can always resort to choosing a smaller selection of activities.

Under certain circumstances, the Finder can lose the information. To safeguard the transfer of the network data, you can place the contents of the Clipboard into the system Scrapbook as follows:

- Choose Scrapbook from the Apple menu.
- Choose Paste from the Edit menu.
- Click the 'close' box to close the Scrapbook window.

Now, without powering down or shutting down the *Macintosh*, quit from Micro Planner and open the application to which the information is being transferred.

The stored information may then be retrieved from the Clipboard or the Scrapbook. As an example, this is how you would transfer the information to a typical application:

- Choose Save or Save As from the File menu to save your project.
- Choose Quit from the File menu to leave Micro Planner.
- Eject the Micro Planner Program disk.
- Insert the program disk for the new application.
- Open the application disk.
- Open the application program.
- Carry out whatever procedures are described in the application's manual to establish a document.

If the network data has been transferred to the Scrapbook then copy the information to the Clipboard like this:

- Choose Scrapbook from the Apple menu.
- Use the scroll bar to display the image of the network data.
- Choose Copy from the Edit menu.
- Click the 'close' box to close the Scrapbook window.

To transfer the Clipboard contents:

- Choose Paste from the Edit menu.

The information is headed by a header line which describes each category of information. After the header, activities are entered one after the other with the categories divided by a Tab character.

The categories used are as follows, the maximum size of each category (or field) is shown in brackets after each description:

I No.	Event before (4)	
Unique ID	Uniqueness identifier (1)	
J No.	Event after (4)	
Duration	Duration (5)	
Calendar	Calendar number (1)	
Type	Activity type (9)	
Resp	Responsibility label (12)	
Zone	Zone label (12)	
Description	Description (254)	
Earliest	Earliest date (9)	
Deadline	Deadline date (9)	
Started	Progress:	Date started (9)
Finished		Date finished (9)
Balance		Balance of duration (5)
Sortcode	Sortcode (8)	
E Start	Time analysis:	Early start (9)
E Finish		Early Finish (9)
L Start		Late start (9)
L Finish		Late finish (9)
St. Master	Master archive start (9)	
Fin Master	Master archive finish (9)	
St. Interim	Interim archive start (9)	
Fin Interim	Interim archive finish (9)	
St. Res. Anal.	Resource analysis start (9)	
Fin Res. Anal.	Resource analysis finish (9)	
Tot. float	Total spare time (5)	
Free float	Spare time unique to this activity (5)	

This group of categories only appears if you ask for resource usage:

Name1 Strt1 Fin1 Qty1	There are 20 possible resources each of which can have:
Name2 Strt2 Fin2 Qty2	
.....	
.....	Name (12)
Name19 Strt19 Fin19 Qty19	Start within activity (5)
Name20 Strt20 Fin20 Qty20	Finish within activity (5)
	Quantity of resource (12)

Appendix

F

Working with Several Applications

When you are working with Micro Planner, you may want to switch to other applications and exchange information.

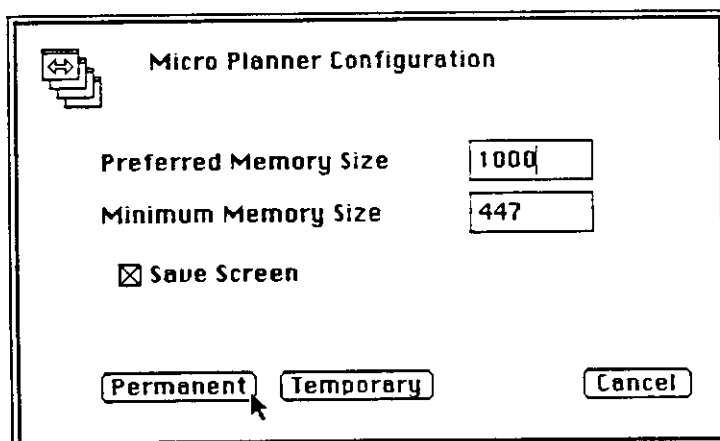
The Switcher™ is a *Macintosh* application which allows you to open more than one application at a time and to switch from one to another.

Multi Finder is a special Finder option which allows you to have several applications live at once.

The Switcher™

When using Micro Planner with the Switcher™, ensure that it is configured to use at least 447K of memory and that you have checked the 'Save Screen' check box.

This diagram is an example of the Micro Planner settings.

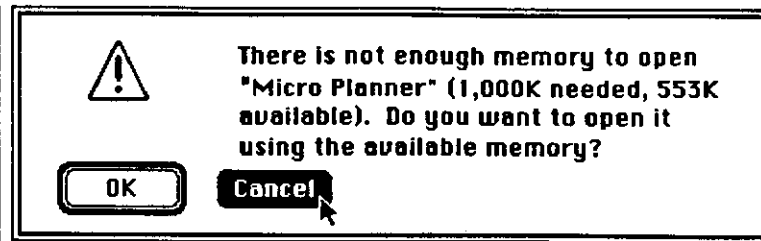


On large memory *Macintoshes*, Micro Planner can usefully employ as much as 1500 for larger projects.

Multi Finder

Micro Planner is compatible with the Multi Finder system.

However! When you start Micro Planner under Multi Finder with 1 megabyte of memory, the following message appears...



Micro Planner is preset to run with 1000K of memory. This is the amount of memory needed for a project containing the maximum number of 1300 activities - smaller projects, of course, require less memory than that set aside.

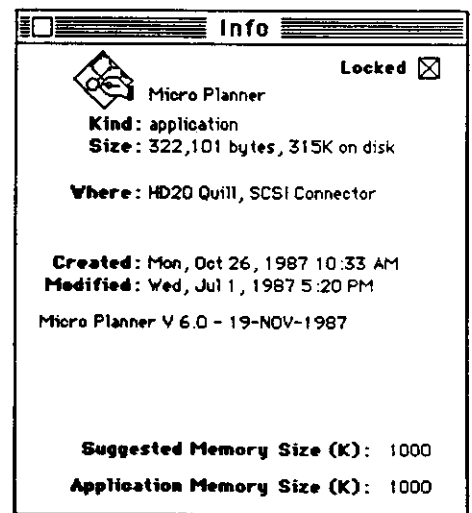
If you do not require the full amount of memory, reduce it like this:

- Click the Cancel button.
- Choose Quit from the File menu to leave Micro Planner.
- Quit from any other applications if appropriate.
- Select Micro Planner from the Finder.
- Choose Get Info from the File menu.

The information window for Micro Planner appears on the screen:

- Click the Locked box so that the cross disappears.
- Double click the number in the Application Memory Size box then type a new number (minimum 447).
- Click the 'close' box.

When you restart Micro Planner, it has this specified memory area to work in.



If there is still insufficient memory to open Micro Planner or you run out of memory when using the program, quit Micro Planner and choose 'About Finder' from the Apple menu. A graph is displayed showing you how much memory is available - if there is none, switch off Multi Finder and run Micro Planner under the Finder.

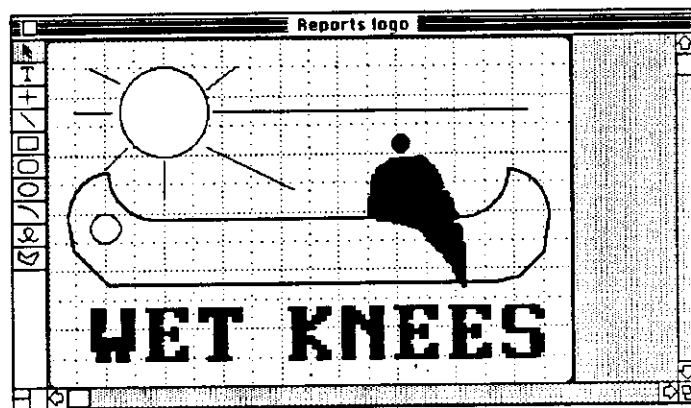
Appendix

G

Custom Logo

When printing reports you can replace the Micro Planner Logo with one of your own creations - your company name or logo, perhaps. Do it as follows...

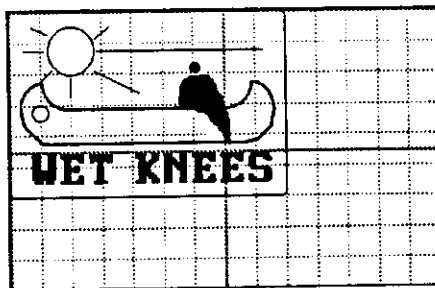
- Produce the logo using MacDraw™ (or any other application which can produce a PICT file).



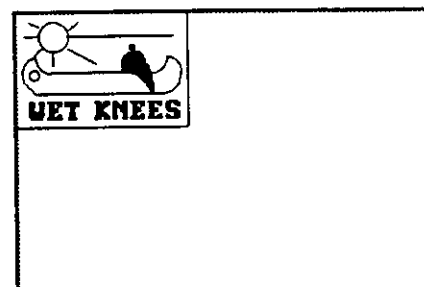
Notes: If you wish to use MacPaint™ drawings these must be pasted into MacDraw™ to form all or part of a MacDraw™ document. This is because MacPaint's file type is not PICT.

Wide pictures are more effective than tall because of the rectangular shape of the logo "frame".

- Ensure that the picture fills all of the MacDraw™ picture.



WRONG



WRONG

Use the scaling facilities of the LaserWriter driver (or of the drawing software) to size the total logo so that it fills one page.

Drawing Size:
9.00 x 6.00



■ Save the picture with the name Reports Logo ensuring that you use the PICT file option.



■ **Move the file into the System Folder on the Startup Disk.**

When Micro Planner produces a report, it looks in the System Folder. If there is a PICT file in there called **Reports Logo** then it uses that picture otherwise it produces the standard Micro Planner Logo.

[illegible]

Appendix

H

Error Messages

Most of Micro Planner's error messages are self-explanatory. You may, however, see some messages which are less friendly like these...

IO Error Number	NAME	MEANING	ACTION
-37	The name chosen is not a valid file name.	File not named/ name contains a colon (:) or starts with a period (.)	Rename file.
-38	File was not open.	Possible software problem.	Call Micro Planning hotline quoting IO error number.
-39	The end of file was reached unexpectedly.		
-40	Tried to position before start of file.		
-41	No memory available for file operation.		
-42	There are too many documents open to open any more.		
-43	The specified file was not found.		
-44	You cannot write to that disk as it is write-protected.	Disk locked.	Slide the disk tab to the unlocked position (away from the disk edge).
-45	The file is marked as locked and cannot be modified.	Document locked.	Choose Get Info from the Finder File menu and click the Locked box. If this fails, try a restart.
-46	You cannot write to that volume as it is locked.	Network - restrictions on published volume.	Change the 'access' mode.

IO Error Number	NAME	MEANING	ACTION
-48	You cannot delete that document as it is open.	File open.	Close file prior to deletion.
-50	Error in parameter list.	Possible software problem.	Call Micro Planning hotline quoting IO error number.
-51	File reference number error.		
-52	Error getting file position.		
-53	Volume required has been ejected!		
-54	You cannot modify this file. (Perhaps it is already in use.)	File open.	User must close file.
-55	This volume already mounted!	Possible software problem.	Call Micro Planning hotline quoting IO error number.
-56	Invalid drive number.		
-57	The specified disk is not a Macintosh disk.	Uninitialized disk / disk formatted by a different computer.	Initialize disk / replace disk with an initialized one.
-58	Diskette uses external filing system.	Possible software problem.	Call Micro Planning hotline quoting IO error number.
-59	An error occurred during the rename of the file, and it was lost.		
-60	You cannot read from or write to that disk (Bad master directory block) - reinitialize the disk.	Possible hardware problem.	
-61	You cannot write over this file as you do not have write permission. (Perhaps its locked).	Disk may be locked.	Slide disk tab to the unlocked position.
	Low level disk IO error (sorry).	Possible hardware error.	Call Micro Planning hotline quoting IO error number.
	No error message available (sorry).	Possible software problem.	
Program Fault - NOT IN PROJ.		Damaged data / software problem.	Call Micro Planning hotline.

Glossary



Activity

The basic component of a project model which signifies that something is going to happen. It is represented as an arrow where action commences at the tail and ends at the head.



Apple Menu

The menu on the far left of the menu bar. Its title is an apple symbol.



Application

A program to carry out a particular task in the real world. Micro Planner is an application.

Archive

The stored results of a previous analysis – there are two archives which are called 'Master' and 'Interim'. The archiving process enables you to place any current set of results into an archive.



Arrow

The diagrammatic representation of an activity or operation on a network.



Backspace

Backspace Key

A key that backspaces over and erases the previously typed character or current selection.

Back Up

A copy of a file used as security for the information stored. Usually a copy is taken on a floppy disk which is then kept in a safe place in case of hard disk failure or accidental removal of the original information. To back up (as a verb) means to make such a copy.

Backward Pass

This is the process when Time Analysis works backwards from the end of a project or from a deadline to calculate all the latest start dates and deadlines for each operation.

Balance

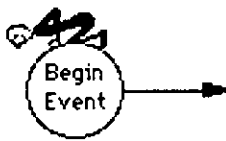
The amount of an activity's duration after 'Time Now'.

Barchart

A chart showing a calendar across the top as a time scale and descriptions down the left side. Used to illustrate graphically when operations should occur against the time scale. Sometimes these are called Gantt Charts.

Base Date

The earliest possible date in a project's calendar.

**Begin Event**

A special event which indicates a point at which logic commences (there is no preceding activity). There can be more than one Begin Event.

Calendar

The term used to define the actual days on which activities can work and those days which are non-working. There are six different calendars available on any project. It also refers to the span of dates which can be used on the project - starting from the Base Date.

Change Points

Dates at which a resource availability or usage level changes.

**Circle**

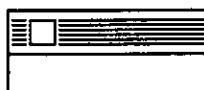
Symbol used to signify an event on a network model.

Click

To position the mouse pointer on something, then press and quickly release the mouse button.

Clipboard

The storage place for what was last cut or copied. It is also used to transfer histogram information to other *Macintosh* applications.

**Close Box**

This refers to the small white box in the top left corner of some active windows. Clicking in the 'close' box closes the window.

Consecutive Activity

An activity which may not be delayed or split during Resource Analysis once it has started.

Critical

A critical activity is an operation which cannot be delayed without causing the project or a deadline to be delayed. A path of such activities is called a Critical Path.

Dangle

Dangles are un-intentional loose ends in the network. A Start Dangle is an event which has no preceding activity but has not been entered as a Begin Event. A Finish dangle is an event which has no following activity but has not been entered as an End Event.

Deadline

A deadline is a date which you can enter to specify the latest permissible completion. When no deadlines are inserted, Micro Planner always assumes that the earliest date when an End Event is reached is also the deadline.

Deadly Embrace

This term is used to describe the awkward situation where an activity is being delayed by another which it, itself is delaying.

Desktop

The *Macintosh's* working environment - the menu bar and the screen.

Document

A collection of information stored on a disk - sometimes called a file.

Double-click

To position the mouse pointer where you want the action to take place, and then press the mouse button twice in quick succession without moving the mouse.

Drag

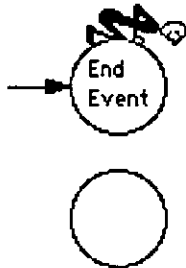
To position the mouse pointer on a screen object, press the mouse button and then, without releasing the mouse button, move the mouse and release the mouse button. On releasing the mouse button, you either confirm a selection or move the object to a new location.

Dummy

A Dummy activity is an activity which does nothing but act as a logic link between two events. Dummy activities do not usually have any duration nor use any resources but there is no law against it.

Duration

The length of time that an activity takes to accomplish, expressed in weeks and days.



Earliest Date

A date which you can enter to specify the earliest date before which an activity or event must not start.

End Event

A special event which indicates a point at which logic completes (there is no following activity). There can be more than one End Event.

Event

A point in time which acts as a link between activities. Special events can be entered for specific purposes and only those need to be entered. Events are shown on a network model as circles.

Event Name

The four character code used to specify an event. It can consist of letters and/or numbers.

File

See document.

Finder

An application which takes over and is always available on the desktop. You use it to manage documents and applications and to access disks. It is the nearest thing you will find on the *Macintosh* which could be described as an operating system.

Flags

These are activities with zero duration which can be used to flag important start or finish dates. Flags are designed to display only one date according to which type of flag it is.

Float

This is project management jargon for 'spare time'. Free float is spare time which is not shared with any other activity as opposed to shared (or total) float.



Folder

A holder for documents and applications on the desktop. Folders allow you to organize information.

Forward Pass

This is the process when Time Analysis works forward from the project beginning to calculate all the earliest start and finish dates for each operation.

Free Float

See float.

Hammock

An activity which calculates its own duration as the elapsed time between its start event and end event on the specified schedule. It is used to show summaries of detailed logic as a single activity for reporting purposes. Its elastic effect can also be used to calculate increased costs of overheads as projects are delayed.

Histogram

A bar graph representation of resource requirements and availability with dates across the bottom and a quantity (or value) scale up the left side.

Holiday

A non-working day specified in a calendar which does not form part of the standard weekly cycle of working and non-working days.

I-beam

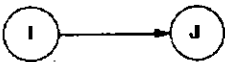
A type of pointer used to locate a position when editing text.

Icon

A graphic illustration of an object - usually a document, application or disk.

I-J numbers

'I' numbers, 'J' numbers or 'I' or 'J' events is project management jargon for the event before (I) or the event after (J) an activity. Their origins are lost in the mists of networking folk lore and the sooner forgotten the better. They are, however, a useful abbreviation in place of 'Preceding Event' or 'Succeeding Event'.

**Initialize**

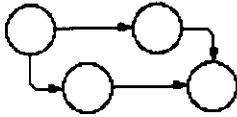
To format a disk to receive information.

Interim Archive

See Multiple Schedules.

Key Event

Sometimes called a 'milestone' this special event can be used to highlight important moments in your project which can be used for summary reporting.



Labels

Simple coded 12 character text labels which can be attached to any activity to form a method of automatic section heading. Label codes are also used for sorting activities in reports. There are two types of labels - 'Zones' which form the major labels and 'Responsibilities' which are the minor labels.

Ladder Structure

A structure of special activities which can be used where activities should overlap in time. The activities which require to overlap are entered as 'Ladder' activities. 'Lead' activities specify how many days the first must stay in advance of the second. 'Lag' activities specify how many days the second ladder should lag behind the first.

Lag

See ladder structure.

Lead

See ladder structure.

Logic

This means *what follows what* or *what comes before what*. A logic diagram (or network) illustrates the logic in graphic terms.

Loop

This is the embarrassing situation where, having prepared a logic model, the arrows return back on themselves to form a loop. Loops will always contain false logic at some point.

Master Archive

See Multiple Schedules.

Menu Bar

The horizontal bar across the top of the screen containing the menu titles.

Milestone

See Key Event.

Model

The representation of your project in the form of a logic network containing all the time, resource and cost information. It should be as close a simulation of your project as you can make it.

Multi Finder

This is a special Finder option which allows you to have several applications open at the same time.

Multiple Calendars

The use of more than one calendar on any one project – different activities can abide by differing calendars. Micro Planner allows six different calendars.

Multiple Resources

The facility to use more than one resource on any activity – Micro Planner allows 20 resource usage records on an activity.

Multiple Schedules

The facility to store results in more than one schedule enabling comparison between sets of results. Micro Planner has five different schedules – two are for the Earliest and Latest Time Analysis results, the third schedule is for Resource Analysis results and the remaining two (Master archive and Interim archive) are user definable.

Network

All the logic which makes up your project. It is made up of arrows and circles representing the activities and their logical links. A network diagram is a chart showing the logic as arrows and circles linked together – sometimes called a PERT chart or logic diagram.

A Network can also refer to hardware linkages between computer systems, enabling them to share information.

Non-Split Activity

An activity which can be delayed during Resource Analysis but may not be split once it has started.

Non-Working Day

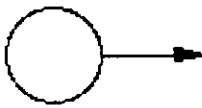
A day in a calendar which is not available for an activity to use. These can form part of a weekly cycle or can be random holidays or vacations sprinkled throughout your project. A non-working day on one calendar may be a working day on another.

Overlapping Activities

Activities which overlap as opposed to contiguous logic. See Ladder Structure.

Overtime

A working day specified in a calendar which does not form part of the standard weekly cycle of working and non-working days.

**Panning**

The facility in Micro Planner which allows you to move through your network 'like Tarzan swinging through the trees' from one activity to another. The panning facility allows you to add new activities or events at the current position or to 'zoom' into existing activities or events to change or examine them.

Pool Resource

A resource which is consumable (like money or bricks) as opposed to a normal resource (like people) of which you have a certain number available regardless of how much you use.

Preceding Event

The event which precedes an activity.

Prefix

A character or characters which is appended to the start of an event name.

Progress

As time goes by, some activities are started or finished or some events are achieved – that's progress. You will have to move the 'Time Now' date to keep up with the passage of time.

Project

OK I'll try! A project is work to be done, operations to be carried out or procedures to be followed in logical order so that you can meet a particular objective or objectives. A continuous process as in production scheduling may not fit into the category of project.

Resource

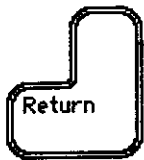
Anything which is required for the completion of an activity – people, money, machines, space etc.

Resource Analysis

The process which attempts to reconcile the time required with the resources required to complete a project. Resource Analysis works to level resource usage down to the resource availability and re-schedules activity start and completion dates accordingly.

Responsibility

An optional label which can be applied to any activity. As well as labelling, it places that activity in a sub-category used for sorting or report selection.



Return Key

A key which usually causes the insertion point on a text screen to move to a new line but in Micro Planner it is occasionally used to confirm a command or entry.

Reverse Logic Event

A special event which is achieved when *any* activity entering it is complete, as opposed to the usual logic ruling where an event is only achieved when *all* preceding activities are complete.

Schedule

A set of start and finish dates for each operation which form the plan of work for a project. Each schedule remains the result of one analysis, either Time or Resource Analysis. Schedules can be used as archives for future comparison.

Scroll

To move information in a window so that a different part is visible.



Scroll Bar

A rectangular bar that may be along the right or bottom of a window. Clicking or dragging in the scroll bar causes the information to scroll.

Select

To specify where the next action is to take place. To select, you click or drag across the information.



Size box

A window resizing box at the bottom right corner of the network screen.

Slippage

An activity which falls behind or is delayed past an earlier completion date is said to have slipped behind schedule. The amount by which it has slipped can be termed slippage.

Sort Code

An optional code which can be entered against any activity to influence the order in which activities or events appear in printed reports. Sort codes may be used as part of your own coding system.

Splitting

Resource Analysis will split an activity if the resources it requires cease to be available or if they are required by a more urgent activity.



Succeeding Event

The event which follows an activity.

Suffix

The character(s) that may be attached to the end of an event name.

Supercritical

An activity which cannot finish in time to meet a deadline is said to be supercritical. A Supercritical activity is identifiable because it has negative float – its latest finish is prior to its earliest finish! A Supercritical path is a path of activities which, when their durations are added together, take longer than the time available to meet a deadline.

Time Analysis

The process during which Micro Planner figures out all the earliest starts and finishes and latest starts and finishes for every activity in the project.

Time Now

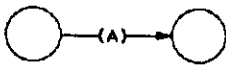
This is the date that Micro Planner uses to start all its time calculations. Progress dates will be prior to time now and anything that is not yet complete proceeds after this date. Time Now can be changed.

Total Float

See float.

Uniqueness Identifier

When two or more activities share the same start and finish events, Micro Planner requires further identification. This identifier will typically appear as an alphabetic letter located within the activity arrow.

**Weekly Cycle**

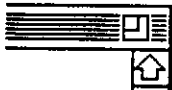
The pattern of working days and non-working days within a typical week. This can be specified by you and can differ between calendars.

Working Day

A day in a calendar which is available for an activity to use. These can form part of a weekly cycle or can be random 'extra working days' (or overtime) sprinkled throughout your project. A working day on one calendar may be a non-working day on another.

Zone

An optional label which can be applied to any activity. It also places that activity in a category used for sorting or report selection.

**Zoom box**

A box to the right of the title bar of the network screen - click the zoom box to expand this window to its maximum size, click again to return the window to its original size.

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Note: The word Ref in place of a page number means Reference manual.

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